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CONTENTS.

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LETTSOMIAN LECTURES (in abridged form) on Jaundice, with Special Reference to Types Occurring during the War. Delivered before the Medical Society of London. By WILLIAM HENRY WILLCOX, C.B., C.M.G., M.D. Lond., F.R.C.P. Lond., Colonel, Army Medical Service.—Lecture I. and Lecture II. *(To be continued)* 869

THE CROONIAN LECTURES on the Rôle of the Sympathetic Nervous System in Disease. Delivered before the Royal College of Physicians of London in June, 1918. By W. LANGDON BROWN, M.A., M.D. Camb., F.R.C.P. Lond., Physician, with Charge of Out-patients, St. Bartholomew's Hospital; Physician to the Metropolitan Hospital; Captain, R.A.M.C. (T.F.)—Lecture II. 873

ORIGINAL ARTICLES

Latent Infection of Healed Wounds. By Sir KENNETH GOADBY, K.B.E., M.R.C.S., L.R.C.P., D.P.H. Cantab., Honorary Bacteriological Specialist, Royal Herbert Hospital, Woolwich (Report to the Medical Research Committee.)—*(Illustrated)* ... 879

Faradic Stimulation of Nerve and Muscle during Operations. By HARRY PLATT, M.S. Lond., F.R.C.S. Eng., Captain, R.A.M.C.(T.); Hon. Surgeon and Surgeon in Charge, Orthopædic Department, Ancoats Hospital, Manchester; Orthopædic Surgeon in Charge, Special Military Surgical Section, 2nd Western General Hospital; and E. S. BRENTNALL, M.B.Manch., F.R.C.S Edin., Assistant Surgeon, Special Military Surgical Section, 2nd Western General Hospital 884

The Use of a Vaccine in the Recent Epidemic of Influenza. By F. T. CADHAM, M.D., Major, C.A.M.C. 885

Blackwater Fever. By J. P. WILLIAMS, M.R.C.S., L.R.C.P. Lond. 886

Cerebro-spinal Meningitis: A Clinical Method of Determining the Type of the Infecting Meningococcus. By A. S. GORDON BELL, M.R.C.S. Eng., L.R.C.P. Lond., Temp. Major, R.A.M.C. 887

Destruction of Mosquito Larvæ in Streams: A Thorough and Economic Method. By ARNOLD K. HENRY, M.B. Dub., F.R.C.S.Irel. 908

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL AND THERAPEUTICAL.

Hæmorrhagic Spinal Effusions. By W. P. S. BRANSON, M.D. Camb., F.R.C.P. Lond., Colonel, A.M.S. 888

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Case of Death from Scorpion Stings. By ALLAN WATSON, D.S.O., M.D. Edin., D.P.H., D.T.M. & H., Captain, R.A.M.C. 889

MEDICAL SOCIETIES.

BRITISH PSYCHOLOGICAL Society: Inaugural Address: Psychology and Medicine 889

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OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM: Annual Congress 893

TUBERCULOSIS SOCIETY: Tuberculosis Officers and Panel Practitioners 895

SOCIÉTÉ DE THÉRAPEUTIQUE, PARIS 896

REVIEWS AND NOTICES OF BOOKS.

Sir William Turner, K.C.B., F.R.S., A Chapter in Medical History. By A. Logan Turner, M.D. Edin. 896

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THE BRAIN-WORKER'S DIET 901

ANNOTATIONS.

The Recent Incidence of small-pox 902

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The Silicosis Scheme 907

Out-of-School Employment 907

SPECIAL ARTICLES.

Ireland 909

Scotland 910

The Portrait of Sir Clifford Allbutt 910

The Services 915

URBAN VITAL STATISTICS 911

THE WAR AND AFTER.

Mentioned in Despatches 912

Casualties among the Sons of Medical Men 912

OBITUARY OF THE WAR:

John Campbell, M.D., Ch.B. Liverp., Captain, R.A.M.C.—*(With Portrait)* 912

CORRESPONDENCE.

Ruptured Rectus Abdominis (Mr. H. W. Carson) 912

The Institution of Maternity Hospitals (Dr. W. R. Fothergill) 912

"Ourselves Only" (Mr. E. H. Worth) 913

Missiles as Emboli (Dr. Andrew Fullerton) 913

The Disposal of a Practice 913

OBITUARY.

Charles Buckman Goring, M.D., B.Sc Lond., Principal Medical Officer, Manchester Prison 914

MEDICAL NEWS.

Royal Devon and Exeter Hospital 879

Presentations to Doctors 879

Cremation Society of England. 883

National Conference on Infant Welfare 895

Donations and Bequests 910

Vital Statistics of Calcutta 913

Royal College of Surgeons of England: Pass-list 914

Correction 914

The late Dr. Joseph Wigleworth 915

Scholarships and Grants of the British Medical Association in Aid of Scientific Research 915

London Inter-Collegiate Scholarships Board: Entrance Scholarships and Exhibitions, 1919... 915

Royal Institution 915

Royal Institute of Public Health: Annual Conference 915

Medical Sickness, Annuity, and Life Assurance Friendly Society 915

The Glasgow University Club.. 915

Belgian Decorations 915

The Dogs' Protection Bill 915

Albert Medal 915

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics: The Pensions Committee 917

House of Lords 917

House of Commons 918

NOTES, SHORT COMMENTS, &c.

Larrey and War Surgery. By WALTER G. SPENCER, M.B., M.S., F.R.C.S., Surgeon to Westminster Hosp.—Part II. *(To be concluded)* 920

Social Medicine in Vienna 921

The Royal St. Anne's Schools, Redhill 921

In Lieu of a Limb 921

The Epidemiology of the "Spanish Disease": Transmission of Infection through Flies 922

Ventilation in the Tropics 922

A Method of Obtaining a Good Surface on Microscope Slides 922

Children's Convalescent Home, Weston super-Mare 922

The Toothless Mother 922

Small Holdings and the Returned Soldier 922

Appointments.—Vacancies 919

Births, Marriages, and Deaths 919

Medical Diary 920

Books, &c., received 940

Communications received 922

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LECTURE I.

Delivered on April 28th, 1919.

Definition.—Osler gives the following brief but excellent definition: "Jaundice or icterus is a condition characterised by colouration of the skin, mucous membranes, and fluids of the body by the bile pigment." Jaundice, like albuminuria, is a symptom and not a disease, and may be met with in a variety of conditions, the common and essential factor being obstruction at some point to the passage of bile along the bile capillaries or ducts.

Historical.—Jaundice is a condition which by its prominent and peculiar features has attracted a great deal of attention in medical literature from the earliest times. Thus there are frequent references to it in the writings of Hippocrates, Galen, and Celsus. Bile was used as a remedy for internal use from the earliest times. Modern research, resulting in the discovery of the bile acids, has led to the use of these constituents of bile as valuable remedies in certain abdominal conditions—e.g., cholelithiasis, hepatic conditions, constipation, &c.

PHYSIOLOGICAL CONSIDERATIONS.

Bile assists in the digestion and absorption of fats and increases, by reason of the presence of the salts of the bile acids, the rate of action of the pancreatic enzymes.

Bile Salts.

The salts of the bile acids are the most important constituents, and are two in number—i.e., sodium taurocholate and sodium glycocholate. In man the glycocholate predominates in the proportion of 9 to 1. The bile salts are secreted by the liver in the bile, but are reabsorbed in the intestine and carried back to the liver, so that a portal circulation of them occurs. They markedly accelerate the action of pancreatic enzymes on the organic foodstuffs; they precipitate native proteids and thus aid in their further hydrolysation and absorption. In addition, they act as solvents of the alkaline earth soaps—viz., those of calcium and magnesium in the intestines—and they are solvents of cholesterin. No doubt the presence of bile salts in the bile is the chief factor from the chemical point of view in the prevention of the formation of gall-stones.

Bile salts taken by the mouth cause an increased flow of bile, and Schafer[7] regards them as the only true cholagogues. Consideration of their physiological properties points to a more extensive use of bile salts therapeutically. Thus in the treatment of cholelithiasis, since gall-stones are composed commonly of cholesterin and calcium bilirubinate, probably the most potent solvent would be a mixture of sodium glycocholate and sodium oleate. The former would dissolve the cholesterin, and the latter would tend to convert the calcium bilirubinate into soluble sodium bilirubinate and calcium oleate, the latter being soluble in the sodium glycocholate.

Bile salts cause a slowing of the pulse, and it is due to their presence in the blood stream in obstructive jaundice that this symptom occurs; they probably also account for some of the other symptoms of this condition.

Bile Pigments.

These important constituents of the bile, by their presence in the blood stream, give rise to the characteristic colour appearance of jaundice. They are derived from hæmoglobin and are formed almost entirely in the liver, where the decomposition of hæmoglobin occurs. Bile pigments, if injected into a vein, are poisonous; they are not normally absorbed from the bile in the intestine, but are converted into stercobilin and evacuated with the fæces.

Blankenhorn[10] has examined a large number of cases due to jaundice and conditions associated with it, and he finds that bile pigments may be present in the blood without jaundice. He represents the cholæmia which he determined by colorimetric methods quantitatively in figures ranging from 15 to 375. And when the degree of cholæmia reaches the figure 40 then jaundice will appear clinically. He finds that bile pigments may be present in the blood and jaundice result without bile pigments being in the urine. In cases of obstructive jaundice, catarrhal jaundice, secondary anæmia, passive congestion of the liver, and pneumonia he has shown the quantitative relation of bilirubin in the blood and urine, and he has made similar determinations for urobilin. He states that the estimation of bile salts in the blood is associated at present with great difficulty.

Cholesterin may be present in bile in amount ranging from 0·5 to 5 per cent., and is excreted by the bowel. It is an important constituent of gall-stones and its solubility in bile salts has been alluded to as an important factor in the prevention of the formation of gall-stones.

Lecithin is a lipoid, and, like cholesterin, is a product of nervous metabolism; it is an important constituent of bile which is not reabsorbed by the bowel, being kept in solution by the bile salts.

FUNCTIONS OF THE LIVER.

Function of liver in relation to fat metabolism.—Major Alexander G. R. Foulerton[11] has in a most interesting paper brought out the relation of this to certain forms of toxic jaundice. Normally, available organic fat is stored up in the liver and has a high iodine value, being composed of a large proportion of unsaturated fatty acids. Leathes has shown that in chloroform and phosphorus poisoning the liver becomes engorged with fat and this fat has a low iodine value, being composed of a large proportion of saturated fatty acids. Foulerton has shown that in poisoning by trinitrotoluene, dinitrobenzene, phosphorus, chloroform, ether, and tetrachlorethane, impaired fat metabolism results as a consequence of impaired action of the liver cells due to toxic chemical influences. Thus, the liver in these conditions becomes engorged with fat of low iodine value. The engorgement of the liver with fat is a concomitant of the occurrence of jaundice in the early stages of many forms of toxic jaundice, and it is, perhaps, to some extent a contributory factor.

The glycogenic function of the liver.—This has been fully studied by physiologists. I have on several occasions found glycosuria of a transient nature in jaundice cases.

Function of liver in protein metabolism.—The most important function of the liver is the part it plays in breaking down the complex products of protein metabolism into simple nitrogenous compounds—e.g., urea, uric acid, hippuric acid, &c., which latter are excreted by the kidney. If this function of the liver fails then intermediate products of protein metabolism occur in the blood, and speedily symptoms of the gravest, and usually fatal, kind result, as, for example, in icterus gravis. The symptoms of "icterus gravis," or "acute yellow atrophy of the liver," are undoubtedly due to an "auto-intoxication," but what the exact chemical compounds of protein metabolism are which cause this condition we do not know. A great field of research is here open to the physiological and pathological chemists.

JAUNDICE: VARIETIES AND CLINICAL PICTURE.

All cases of jaundice may be classed in the two great divisions: (1) Simple obstructive jaundice; (2) hæmo-hepatogenous or toxæmic jaundice.

Simple obstructive jaundice is the type resulting from obvious mechanical obstruction independent of changes in the blood or bile. In this type of jaundice a careful physical examination and the usual methods of clinical investigation will reveal usually the cause.

Hæmo-hepatogenous or toxæmic jaundice is a form of jaundice caused by the circulation in the blood of toxic substances of chemical or microbic origin, as a result of which occur destruction of red blood corpuscles, an obstructive catarrh of the small intrahepatic bile-ducts, an increased viscidity of the bile, and, in severe cases, a degeneration of the liver cells resulting in auto-intoxication (icterus gravis). The following varieties occur.

1. Jaundice, sometimes known as "toxic jaundice," due to the action of chemical poisons such as tetrachlorethane, trinitrotoluene, chloroform, phosphorus, toluylene-diamine, nitrobenzenes, nitrophenols, arsenobenzol derivatives, arseniuretted hydrogen, mushrooms, snake venom, &c.

2. Jaundice due to the microbic toxins formed in various specific fevers and infections, such as relapsing fever, malaria, enteric group disease, typhus, pneumonia, influenza, syphilis, yellow fever, pyæmia, septicæmia, &c. In this group should be included infective jaundice, due to spirochætosis ictero-hæmorrhagica, and probably epidemic catarrhal jaundice and Weil's disease.

3. Jaundice associated with various forms of blood diseases —e.g., splenic anæmia, pernicious anæmia, acholuric jaundice, hæmoglobinuria.

In *hæmo-hepatogenous jaundice* the obstruction caused by inflammatory catarrh of the smaller intra-hepatic ducts is not usually complete, so that many of the symptoms due to the direct action of bile in the circulation in simple obstructive jaundice are absent. Thus the skin complications and the slowing of the pulse are not present in toxæmic jaundice. In this type of jaundice the yellow coloration of the skin is usually much less pronounced, and in cases where it becomes deep the complete intra-hepatic obstruction is only a temporary one, and does not last long enough to cause symptoms of bile toxæmia. The stools may be pale for a day or two during the temporary complete obstruction stage, but usually they are well coloured with fæcal pigment.

The urine in cases of marked jaundice will contain bile pigment, which in milder cases is often absent. Bile salts are generally absent, since their rate of production is diminished owing to defective liver function in consequence of the toxic agent causing the jaundice. The blood will contain bilirubin, and when this reaches a certain degree jaundice will occur. At about this stage bilirubinuria will be recognised; it may in exceptional cases appear before the jaundice, but usually occurs afterwards.

In hæmo-hepatogenous jaundice the symptoms due to the jaundice *per se* are unimportant as compared with those due to the primary intoxication. Thus, with chemical poisons the action of the substance on the body generally, and especially on the liver cells, in causing an auto-intoxication is much more profound than the mere effect on the bile capillaries causing jaundice. In the case of microbic poisons the action of their toxins in causing the specific symptoms of the disease—e.g., malaria, relapsing fever, enteric, influenza, &c.—is much more important than the symptoms resulting from the mere production of jaundice, these latter being quite overshadowed by the former.

In toxæmic jaundice the blood shows a great liability to hæmolysis; the red corpuscles are smaller and have increased fragility. In simple obstructive jaundice the red corpuscles are larger and show increased resistance to hæmolysis.[13] Severe constitutional symptoms are much more marked generally in toxæmic jaundice, and in this condition the grave and fatal symptoms of "icterus gravis" are much commoner and are likely to occur very much earlier in the disease.

PATHOLOGY OF JAUNDICE.

In *hæmo-hepatogenous or toxæmic* jaundice the causation differs from that of simple obstructive jaundice in that toxic substances, whether of bacterial or chemical origin, circulate in the blood. These cause a certain amount of destruction of red blood cells, the products of which are conveyed to the liver, in company with the circulating poison, which causes degeneration of the liver cells. An inflammatory catarrh of the bile capillaries is produced, as a result of which the secretion becomes very viscid and the lumen of the fine ducts narrowed. In this manner an intra-hepatic obstruction to the flow occurs in the fine bile-ducts, and bile pigments find their way into the blood stream via the lymphatics, and probably also by the blood capillaries. The absorbed bile in toxæmic jaundice is usually rich in bile pigments which arise from the increased destruction of hæmoglobin; it is deficient in bile salts owing to the impaired function of the liver cells.

When the bilirubinæmia reaches a certain degree jaundice occurs, and at a still higher percentage bilirubinuria. Bile salts are not usually passed in the urine, since their percentage in the blood is too low, but in some cases they occur in small amount.

Experiments by Stadelmann and Hunter have shown that the production of jaundice is not directly proportional to the amount of red blood cell destruction.

Recent histological studies of the liver in long-standing cases of toxic jaundice from tetrachlorethane, trinitrotoluene, &c., by Spilsbury and others, have shown that considerable destruction of the liver cells occurs, and when this destruction is compatible with life the normal liver tissue becomes replaced by tissue of an inflammatory nature, resulting from the absorption of the necrosed liver cells. In this abnormal tissue leakage of bile from the small capillaries into lymphatics and blood-vessels no doubt occurs and is a factor in causing jaundice.

To sum up. The toxic substances causing hæmo-hepatogenous jaundice have three important actions: (1) the causation of degeneration of the liver cells with impairment of hepatic function; (2) destruction of red blood cells; (3) the production of an obstructive catarrh of the fine intra-hepatic bile-ducts.

Each toxic substance differs in the relative degree of its respective three actions. Thus if (1) predominates only slight jaundice may occur, but the symptoms will be those of auto-intoxication (icterus gravis), and of the gravest character. Examples of this type of poison are arseno-benzol derivatives, chloroform, mushroom poisoning, arseniuretted hydrogen. If (2) predominates anæmia will be marked and jaundice may be slight only—e.g., metadinitrobenzene. If (3) predominates jaundice will be very marked—e.g., in tetrachlorethane, trinitrotoluene, and toluylene-diamine.

Bacterial poisons likewise possess these three actions in varying degree—e.g., (1) predominates in yellow fever, (2) in malaria, (3) in relapsing fever, epidemic catarrhal jaundice, spirochætosis ictero-hæmorrhagica.

Our knowledge of the pathology of toxæmic jaundice has been of the utmost practical value to the nation during the present war. It enabled early recognition and detection of the cause of the toxic jaundice which was so common amongst aeroplane and munition workers, and it directed the preventive methods which were so successful.

Let us not forget that this knowledge has been gained almost entirely as the result of carefully conducted experiments on dogs, and that in this research other animals, as shown above, were found unsuitable. It will be nothing short of a national calamity if this source of research is to be denied the medical profession in the future. The recent letters to the *Times* of Professor Schafer and Dr. Leonard Hill express the vital importance of carefully conducted experiments on dogs in scientific research, the knowledge gained by which will be of inestimable practical benefit to the nation.

DIAGNOSIS AND TREATMENT OF JAUNDICE.

The examination should be made in daylight, and special attention should be paid to the conjunctivæ, skin, palate, stools, and urine. Care must be taken to exclude the lemon-yellow tint associated with the cachexia of malignant disease or pernicious anæmia. An examination of the conjunctivæ over the sclerotics usually differentiates these. The bronzing of sunburn and the pigmentation of Addison's disease and other conditions must likewise be distinguished. In doubtful cases an examination of the blood serum for bilirubin is of great importance.

In a case of jaundice careful search should be made by the usual clinical methods for the primary cause. The important course is the treatment and removal of the primary cause of the condition. The diet should be free from fats; protein constituents should be reduced, since there is a tendency, especially in toxæmic cases, for acid intoxication; alcohol is best avoided; saline aperients should be given, but powerful purgatives are best avoided. Calomel in small repeated doses is not advisable, since there is a risk of symptoms of mercurial stomatitis developing.[17] Alkalies—e.g., sodium bicarbonate—should be given by the mouth in large doses, and in toxæmic cases[18] strong solutions of bicarbonate of soda may be given by the rectum as frequently as it can be retained. Any special symptoms will require appropriate treatment as they arise.

False jaundice.—Attempts may be made to feign jaundice by coloration of the skin with saffron or turmeric or other yellow dye (Wickham Legg[1]). Trinitrotoluene produces a yellow staining of the skin, but as the conjunctivæ are

unaffected and the urine and stools are normal little difficulty in detection is experienced. During the war picric acid has not uncommonly been taken by malingerers for the purpose of simulating jaundice. Fontaine has laid stress on the absence of colourless stools, the less marked staining of the tissues, and the absence of pyrexia and premonitory symptoms before the occurrence of jaundice. He pointed out that the conclusive test was absence of bile pigments in the urine and the presence of the picric acid derivative, picramic acid. In large doses picric acid might cause true hæmo-hepatogenous (toxæmic) jaundice when both bile pigments and picramic acid would appear in the urine.

References to Lecture I.

(The references are given in full, although only a few of them are germane to the abridged text.)

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LECTURE II.

Delivered on April 30th, 1919.

TOXIC JAUNDICE PRODUCED BY THE ACTION OF CHEMICAL POISONS.

BEFORE the war our knowledge of this form of jaundice was largely dependent on animal experiments. Since the war experiments on the largest scale have unavoidably been carried out on munition workers and those engaged in work involving the use of dangerous poisons.

TETRACHLORIDE OF ETHANE POISONING.

Tetrachloride of ethane, sometimes known as acetylene tetrachloride, was used in the preparation of cellulose varnish ("dope") which was extensively employed in the manufacture of aeroplanes in order to give a firm, airtight, and waterproof coating to the calico stretched on the framework of the aeroplane wings. Several coats of dope had to be applied. The dope was made by dissolving acetate of celluiose in a mixture of benzene, acetone, methylated spirit, and tetrachlorethane. It was a viscid colourless liquid smelling like chloroform, and on evaporation it gave off a mixed vapour of the volatile liquids which was 1·91 times as heavy as air.

In September and October of 1914 the occurrence of several cases of illness associated with jaundice was noticed [2] at the Hendon Aeroplane Factory and others. The first case I saw was in November, 1914, at St. Mary's Hospital. On Dec. 4th, 1914, Dr T. M. Legge and I visited the Hendon Aeroplane Works. The smell of tetrachlorethane was very much in evidence, and at that time the ventilating arrangements by the plenum system were such that the heavy vapour of the dope was blown about the large room of the factory instead of being extracted. A reference to a plan on which were marked the places where affected persons worked showed that several cases of jaundice occurred at quite considerable distances—e.g., 30 or 40 yards—from where the dope varnishing was done. The more severe cases occurred in persons who were actually using the dope or were near where it was used. On questioning some of those working in the factory at the time of our visit it was found that several workers complained of nausea, biliousness, drowsiness, constipation, loss of appetite, nasty taste at the back of the throat, headache, and general malaise, these symptoms being no doubt due to the dope vapour.

Symptoms.

The following is a general résumé of the symptoms of tetrachlorethane poisoning as it occurred from inhalation of the vapour in factories. For some days the patients complained of general malaise, drowsiness while at work, loss of appetite, nausea, retching in the morning, unpleasant taste in the throat, constipation usually, and headache. Abdominal discomfort was present in some cases. After indefinite symptoms of this kind, lasting several days or even weeks, definite jaundice developed, associated with pale stools and bilious urine. In severe cases during the jaundice stage "icterus gravis" might develop. The patient would vomit and become mentally confused, stuporose, or delirious. Purpura, hæmorrhages, hæmatemesis, or convulsions might occur, and coma supervene and death result. In the terminal stage of the disease, which usually only lasted two or three days, suppression of urine occurred towards the end.

If the patient was removed from the influence of the poison in the early stages of the illness the symptoms cleared up, but it was some weeks before the jaundice became completely free even if it was only slightly marked. In cases with deep jaundice the prognosis was bad and recovery was unlikely.

Treatment.

The treatment of patients suffering from toxic jaundice due to "dope vapour" [4] consisted firstly in their removal from all influence of the poison. Rest, light diet containing ample carbohydrate, including dextrose or honey and a much-reduced amount of fat and proteid, saline aperients, and general hygienic measures were all that were necessary in mild cases.

In cases with marked jaundice alkalies should be given by the mouth in full doses—e.g., sodium citrate and sodium carbonate, ½-drachm doses of each in solution every two or three hours; also by rectum 3 drachms of bicarbonate of soda and 4 drachms of glucose dissolved in 10 oz. of water every eight hours.

Where symptoms of icterus gravis threaten, intravenous or subcutaneous injections of normal saline containing 2 drachms of bicarbonate of soda to the pint should be given twice daily until the toxic symptoms improve.

This line of treatment should be adopted in cases of toxic jaundice due to other chemical poisons—e.g., trinitrotoluene, delayed chloroform poisoning, &c.

Experiments on rats showed conclusively that tetrachlorethane was a powerful liver poison, that dope vapour was a liver poison, and that the poisonous property of dope vapour was due to tetrachlorethane being present in it.

Owing to the great danger to which workers were exposed, the use of tetrachlorethane as a constituent of "dope" was given up, a good substitute having been discovered.

TRINITROTOLUENE.

The general symptoms and pathological changes produced by trinitrotoluene resemble closely in many respects those caused by tetrachlorethane, but the former is associated with blood destruction, and some cases show a severe anæmia, whilst in the latter this characteristic is little if at all marked.

The main channel of absorption of the poison appears to be through the skin, and the danger is increased by the presence of grease or oil. The skin and hair become stained yellow. In a few cases dermatitis has occurred on the hands, wrists, face, and neck, associated with itching and desquamation. More rarely a raised erythema may occur on the trunk and affect also the arms, thighs, and legs. Usually dermatitis is absent.

The poison may be inhaled in the form of dust or vapour, and a certain amount of dust may be swallowed. After a varying interval of a few days to several months of exposure listlessness, pallor of the face occur, accompanied sometimes by cyanosis and a pinched appearance. Nausea, distaste for food, and a bitter taste are early symptoms. Inhalation of the dust causes a burning in the throat and nose with excessive secretion, together with cough and tightness of the chest. Constipation, depression, giddiness, and often faintness are early symptoms, and morning vomiting often occurs. After a varying period,

sometimes quite short, jaundice commences, and often becomes deep with pale stools and bilious urine. At this stage the liver is somewhat enlarged and can be felt on palpation. These symptoms indicate grave changes in the liver, associated with catarrh of the finer bile-ducts and resulting biliary obstruction.

Should the function of the liver cells become seriously impaired symptoms of "icterus gravis" may appear owing to auto-intoxication. The patient becomes irritable, restless, and delirious, vomiting occurs, and a condition of stupor follows. There may be convulsions or subsultus tendinum and Cheyne-Stokes breathing is commonly present. Coma ensues with often an extensor plantar reflex and sometimes exaggerated knee-jerks and ankle clonus. Hæmatemesis, melæna, or epistaxis are common at this stage, and death commonly results within three days of the onset of these symptoms.

The *treatment* of trinitrotoluene jaundice cases should be on the lines laid down for the similar condition in tetrachlorethane poisoning.

DINITROBENZENE.

This substance, which has been used for many years in the manufacture of explosives, is a yellowish crystalline powder, the channels of absorption of which are similar to those for trinitrotoluene.

The poison has a very marked action on the red blood corpuscles, causing severe anæmia, dyspnœa, and cyanosis, the latter being due to the formation of methæmoglobin. The effects on the blood are by far the most prominent and earliest feature, but after prolonged exposure to the poison degenerative changes may occur in the liver and an obstructive catarrh in the fine bile-ducts develop. In such cases toxic jaundice will occur and fatal symptoms of "icterus gravis" are liable to supervene.

Picric acid (trinitrophenol) has been used largely as an explosive. It often causes an irritative dermatitis in workers exposed to the dust. Absorption of the poison into the system causes symptoms similar to those of dinitrobenzene, and in very severe cases toxic jaundice and icterus gravis may result.

Dinitrophenol, which is sometimes used in munition factories, causes symptoms similar to picric acid, except that dermatitis is less marked.

CHLOROFORM.

After the administration of this as an anæsthetic occasionally toxic jaundice will develop. The symptoms, known as delayed chloroform poisoning, often commence two days or so after the immediate effects of the anæsthetic have passed away. Vomiting, jaundice which is often only of slight degree, and nervous symptoms, developing into those of "icterus gravis," is the common course of such cases, which commonly terminates fatally within a very few days.

The incidence of delayed chloroform poisoning is greater in children, and a predisposition to the condition is undoubtedly a pre-existing acid intoxication. In a discussion on this subject[12] at the Royal Society of Medicine in February, 1912, it was pointed out that the excessive restriction of food before an anæsthetic was likely to act as a predisposing cause to an acid intoxication, which would greatly increase the risk of delayed chloroform poisoning. The free administration of sugar and carbohydrate foods before an anæsthetic was recommended as a prophylactic.

Careful examination of the urine for acetone and diacetic acid should always be made before an anæsthetic is administered, and if these are present the operation should be postponed if possible, and chloroform should not be used.

ARSENIURETTED AND PHOSPHORETTED HYDROGEN.

Arseniuretted hydrogen is an intensely powerful gaseous poison, causing very intense destruction of the red blood corpuscles; it is also a powerful poison to the liver cells. Within a few hours of exposure there may be extreme anæmia, vomiting, weakness, rigors, hæmatemesis, hæmaturia, and melæna. Jaundice occurs as a result of the excessive production of bile pigments, and the obstruction caused by the viscid bile and the catarrh of the fine bile-ducts. The terminal symptoms are those of toxæmia due to auto-intoxication—viz., those of icterus gravis.

Phosphoretted hydrogen is an extremely poisonous gas, having an action very similar to that of arseniuretted hydrogen.

ARSENOBENZOL DERIVATIVES.

These substances have a powerful toxic action on the liver cells and an intense degeneration with much fat deposition is found in the liver and kidney in fatal cases.

After the administration of salvarsan there are generally produced some slight symptoms due to the direct toxic action of the drug—viz., slight vomiting, looseness of the bowels, and a slight rise of temperature. These symptoms only last for about 24 hours, and usually no other symptoms occur.

Very occasionally, however, after a quiescent period of one or two days, within four days from the administration usually, symptoms of profound toxæmia occur and the prognosis in such cases is extremely grave. These symptoms are undoubtedly due to an auto-intoxication, and are such as occur in acute yellow atrophy of the liver. Thus an abnormal mental condition—e.g., irritability and delirium often associated with slight jaundice—develops, the patient becomes stuporose, convulsions may occur, and the breathing may be Cheyne Stokes in character. Coma supervenes, and death results usually after two or three days from the onset of these grave symptoms.

It was thought that the nervous symptoms were the result of the action of the arsenic compound on the central nervous system, but this theory was disproved by investigations made by Mr. J. Webster, F.I.C., and myself[13] in which it was shown that arsenic was absent from the central nervous system in these fatal cases. There is no doubt that these toxæmic symptoms are due to auto-intoxication following the loss of hepatic function consequent on the destructive effect of the arsenobenzol compound on the liver cells.

The symptoms above described must be carefully distinguished from those of acute arsenical poisoning, such as vomiting, diarrhœa, rashes, &c. When these occur after the administration of arsenobenzol compounds they are probably due to impurities or decomposition of the preparation.

In consequence of the danger of occurrence of grave toxæmia from arsenobenzol compounds, the dose has been wisely reduced from the original 0·6 g. of salvarsan or 0·9 g. neosalvarsan, as recommended by Ehrlich, to 0·3 g. kharsivan, or 0·45 g. neo-kharsivan, repeated at intervals of two to three weeks. It was shown in our paper already referred to that after an intravenous injection of 0·5 g. of salvarsan, arsenic could be detected in the urine and fæces for three weeks afterwards.

EFFECTS OF OTHER SUBSTANCES.

Toluylene-diamine.—Toluylene-diamine in dogs has a specific effect on the intrahepatic bile capillaries, causing an obstructive inflammatory catarrh with consequent deep jaundice.

Phosphorus poisoning.—The primary stage is one of gastro-intestinal symptoms due to the irritant action of the poison. After a varying interval of a few days this is followed by jaundice and the typical symptoms of "icterus gravis," which are generally fatal within two or three days. Pathological examinations have proved that phosphorus has a most powerful action on the liver, causing an intense degeneration associated with fatty engorgement of the cells with resulting loss of function and auto-intoxication.

Mushroom poisoning.—Poisonous fungi eaten in mistake for edible mushrooms produce intense degeneration of the liver cells, with symptoms of auto-intoxication often associated with jaundice.

Snake-bite.—The primary effect in the causation of jaundice is due to the great blood destruction produced.

A review of such examples of toxic jaundice as tetrachloride of ethane, trinitrotoluene, dinitrobenzene, picric acid, dinitrophenol, chloroform, arseniuretted hydrogen, phosphoretted hydrogen, arsenobenzol derivatives, toluylene-diamine, phosphorus and mushroom poisoning and snake-bite shows that there is a common pathological explanation of all. Degeneration of the liver cells, blood destruction, and production of a catarrh of the intrahepatic bile-ducts are in varying respective degree the causation of the effects produced. Jaundice is a symptom which may occur early or late, or may, indeed, be absent, according to which causal factor predominates.

Dosage in relation to quantity and mode of administration of the poison, idiosyncrasy, age, state of health, and the type of poison determine the exact nature of the symptoms produced.

(To be concluded.)

The Croonian Lectures

ON

THE RÔLE OF THE SYMPATHETIC NERVOUS SYSTEM IN DISEASE.

Delivered before the Royal College of Physicians of London in June, 1918,

BY W. LANGDON BROWN, M.A., M.D. CAMB., F.R.C.P. LOND.,

PHYSICIAN, WITH CHARGE OF OUT-PATIENTS, ST. BARTHOLOMEW'S HOSPITAL; PHYSICIAN TO THE METROPOLITAN HOSPITAL; CAPTAIN, R.A.M.C. (T.F.).

LECTURE II.[1]

THE SYMPATHETIC NERVOUS SYSTEM AND DISEASES OF DIGESTION.

MR. PRESIDENT, FELLOWS, LADIES, AND GENTLEMEN,—The object of digestion is to reduce the food molecules into a form capable of passing through a membrane. For this purpose two processes are brought into play: chemical and mechanical. Juices containing active chemical substances are poured on to the food, while these are aided by the mechanical processes of mastication, deglutition, and peristalsis, by which every particle of food is brought into contact first with the active juices and then with the absorbing membrane.

THE INNERVATION OF THE ALIMENTARY TRACT.

The dominant nervous agent in all this is the para-sympathetic, both on the secretory and motor sides. An outstanding fact is the way the vagus controls the digestive processes right down to the point at which the sacral division of the para-sympathetic takes charge. This is explicable in terms of Gaskell's theory.

Although his main conception of the autonomic nervous system was laid down in 1885, he continued for 30 years to extend his views in accordance with the progress of our knowledge, as is shown by his book on "The Involuntary Nervous System," the proofs of which he had nearly completed at the time of his death in 1915. His conception of the origin of the vertebrates was confirmed in many particulars by researches made by others subsequent to the publication of his original hypothesis. But coincidently with this his conception was modified in such a way as to remove many of the objections to it previously expressed by morphologists. Briefly, it is as follows.

Gaskell's Views on the Origin of the Vertebrates.

At the time when the vertebrate first appeared arthropods like those of the present day had not been evolved. We may therefore regard the ancestor of the vertebrate as being much nearer the annelid stage. The central nervous system of the invertebrates formed the central nervous system of the vertebrates by growing round and enclosing the alimentary canal of the former, which persists as the ventricles of the brain and the central canal of the cord; so that the alimentary canal of the vertebrate is a new formation derived from structures already existing in the invertebrate ancestor.

He regarded the new alimentary canal as formed by the fusion of a number of branchial appendages, the striated muscles of which are supplied by the facial, glosso-pharyngeal, and vagus nerves. At first the chamber so formed extended right up to a similar chamber, also formed, possibly, by appendages at the anal end of the body, and opened into that chamber. So that originally, as at present in the arthropods, the double segmentation due to appendages and trunk muscles existed throughout the whole length of the animal. As new body segments were formed by which greater mobility was gained, there would not be a corresponding formation of new appendages of the invertebrate type, but the new-formed gut would simply lengthen and its muscles would be supplied by those nerves already formed. Hence the distribution of the vagus right up to the point at which the pelvic visceral nerve takes control.

On the other hand, the limbs of the vertebrate are a new outgrowth from the longitudinal muscles of the body, which outgrowth must carry its investments of skin with it. Hence the absence of visceral fibres from the new part of the cord corresponding to this, and hence, also, the drawing out into the sweat glands, hair follicles, and blood-vessels of the limb of the sympathetic fibres which always supply these structures. Hence, again, the reason for the segmental skin areas being arranged pre-axially and post-axially, and not circularly as they are around the trunk.

This phylogenetic theory is necessary to the comprehension of the absence of a segmental arrangement of the muscles of the alimentary canal, and of the meeting within it of such widely separated anatomical units as nerves of bulbar and sacral origin.

Functions of Para-sympathetic and Sympathetic.

Further, the para-sympathetic and sympathetic are antagonistic in their action throughout the alimentary tract. The para-sympathetic produces those sensations of hunger which lead to food being taken. It starts, and to some extent maintains, the secretion of the active chemical juices that digest the food. It causes the peristaltic waves in the œsophagus; it plays an important part in gastric peristalsis; it maintains the tone which is necessary for the pendulum movements and peristaltic waves in the bowel, and it can increase them when required. It also controls the final evacuation of the fæcal residue. It is anabolic, for it is responsible for the digestion and assimilation of the food molecules which are the ultimate source of the bodily energy.

It leads to the taking in of food by exciting a feeling of hunger. It is generally agreed that the pangs of hunger are caused by contractions of the stomach and other parts of the alimentary canal. This was suggested by Weber in 1846, and again by Hurst in his Goulstonian lectures in 1911. Boldèreff, in 1905, proved the existence of rhythmical contractions of the alimentary canal under such conditions, and Washburn was able to show that these contractions coincided with the sensations of hunger by accustoming himself to tolerate a balloon in the stomach attached by a rubber tube to a recording apparatus. He signalled when the hunger pang was experienced, and it was found that this occurred just as a rhythmic contraction was reaching its maximum.

Under certain conditions there is an abnormal sensation of hunger to which the name of bulimia has been given. Abnormal hunger may be experienced with pituitary tumours and tapeworm, but this falls into a different category. Violent impulses of hunger may also occur as an aura in epileptics. Apart from such conditions it is regarded as a neurosis due to over-action of the vagus, a view which is supported by the known effect of the vagus on gastric motility.

SECRETION OF DIGESTIVE JUICES.

The chorda tympani and the auriculo-temporal have long been known to contain the secretory fibres to the salivary glands. Pawlow's masterly experiments have proved the importance of the vagus in the secretion of gastric juice and the influence of appetite and the sense of taste in exciting the secretory action of the vagus. From this point on, chemical mechanisms begin to assume greater importance as secretory stimulants.

The secretion of gastric juice, begun by the vagus, is carried on by the action of gastric secretin formed in the pyloric glands (Edkins). The secretion of pancreatic juice is due, mainly, to the formation of secretin in the duodenal mucosa by the action of the hydrochloric acid in the gastric juice on the prosecretin stored there (Bayliss and Starling). But even here nervous mechanisms are not altogether in abeyance.

In 1911 Cathcart obtained pancreatic secretion in animals by vagus stimulation. Clayton-Greene has also recorded a case which seems to point to nervous control. During pylorectomy for malignant disease of the stomach a pancreatic fistula was accidentally formed. A few seconds after food was swallowed pancreatic juice began to appear, and this occurred even when the food had only been seen and not swallowed. Nervous mechanisms are distinguished from chemical by their speed, and here the reaction was extremely rapid.

However, we may assert that although the para-sympathetic initiates digestive secretion, as food passes along the alimentary canal the nervous factor becomes less important and the chemical factor more important. Corresponding to

[1] Lecture I. was published in THE LANCET of May 17th, 1919.

this we find that the antagonistic action of the sympathetic on secretion is more clearly demonstrable in the inhibition of salivary secretion than of gastric or pancreatic. This inhibitory action is well seen in the dry mouth of fear, which is the physiological basis for the old Indian "rice ordeal," in which persons suspected of crime were given consecrated rice to chew. The man who spat it out dry was adjudged guilty, for the fear of detection had stopped salivary secretion.

There can be little doubt that the sympathetic has a corresponding inhibitory action on gastric secretion. Cannon clearly showed this by the cessation of secretion in frightened or enraged animals. Domestic strife is a fertile cause of dyspepsia, and the inhibitory effect on digestion of emotional stimulation of the sympathetic is proverbial:

"Better is a dish of herbs where love is, than a stalled ox and hatred therewith."

MECHANICAL FACTORS.

On turning to the mechanical factors we see that from the moment the food bolus passes between the pillars of the fauces to the time that its residue reaches the rectum it has escaped from the control of the voluntary nervous system and is directed by the autonomic nervous system.

We may regard this part of its course as divisible into three main districts: (1) the pharynx, œsophagus, and cardiac half of the stomach, where both motor and inhibitory nerves are supplied by the vagus (bulbar division of para-sympathetic); (2) the pyloric half of the stomach and the small intestine, supplied with motor fibres by the vagus and inhibitory nerves by the sympathetic through the solar plexus; (3) the colon and rectum, supplied with motor fibres by the pelvic visceral nerve (sacral division of para-sympathetic) and inhibitory nerves by the sympathetic through the inferior mesenteric ganglion. To these we must add, in accordance with Elliot's law of the innervation of a hollow viscus—

"When the quiet lodgment of contents is facilitated by the presence of sympathetic inhibitory nerves to the body of the viscus, there will also be sympathetic motor nerves to the sphincter closing the exit."

Such motor nerves obviously reinforce the general inhibitory effect of the sympathetic on the alimentary canal. These rules for the innervation of the alimentary canal apply also to such outgrowths from it as the gall-bladder and its ducts.

The Passage of Food Along the Alimentary Tract.

At the moment the constrictors of the pharynx are drawn over the food bolus, voluntary control over the movements of the alimentary canal is lost. The para-sympathetic takes over control, and a slow peristaltic wave, started by the vagus, passes along the œsophagus. In the swallowing of liquids, however, there is no need for peristaltic waves, the œsophagus remaining dilated and passive. The passage of fluid to the stomach takes four to eight seconds, half of which time is occupied in passing through the cardiac sphincter. Solids require the aid of peristalsis, and take 8 to 18 seconds if well lubricated, but a dry bolus may remain above the cardia for many minutes (Hurst).

When the food enters the stomach it is seen to pass rapidly and without the aid of peristaltic waves to the pyloric portion. Here active waves are soon seen sweeping towards the pyloric sphincter about three times a minute, gaining force as they go. The absence of peristaltic waves at the cardiac end enables salivary digestion of carbohydrate to continue while gastric digestion is proceeding at the pyloric end. This affords a rationale for the custom of taking carbohydrate at the end of a meal.

As the stomach empties it is pulled up until the pyloric orifice becomes the lowest part, which assists the completion of the process. In duodenal ulcer it is noteworthy that this pulling up of the stomach can be observed from the very beginning. Long after the fundus returns to its fasting condition the pyloric portion contains food, and shows those vigorous waves of contraction which form the gastric mill. The semi-digested food is thus kept in close contact with the glands in which the stimulant to gastric secretion is elaborated, and thereby contributes to its own digestion. It is probable that the much greater frequency of lesions at the pyloric, as compared with the cardiac end, is due to injuries incidental to its greater activity.

Small Intestine.

When the food passes into the small intestine movements of two kinds are observed:—

1. Pendulum or segmentation movements, which travel at the rate of 2 to 5 cm. a second, and depend on muscle tone. They cannot move the contents along, but serve to mix them thoroughly by forming a number of alternately constricted and dilated areas, each of which is divided exactly into two by the next movement.

2. Peristaltic movements, a powerful wave of constriction following immediately on a wave of dilatation, so that the contents are always being driven from a contracted into a dilated area. According to Bayliss and Starling, these waves depend on an intrinsic nervous mechanism of the bowel, the plexus of Auerbach. If this is true, it is the only example of a true local nervous reflex, and Gaskell gives reasons for caution in accepting this conclusion, as yet. There is no doubt that the extrinsic nerves affect these waves, the vagus increasing, and the splanchnic inhibiting them.

Large Intestine.

As regards the large intestine, this can be divided into three portions, which do not correspond exactly to the anatomical divisions: (1) The proximal part, characterised by the presence of anti-peristaltic waves; (2) an intermediate part, conforming to the type of movement seen in the small intestine; and (3) a distal portion, the rectum, where the central nervous system again assumes control. It is in this part that disturbances are most likely to occur, because the automatic call for the discharge of its contents can be voluntarily suppressed. "Anti-peristalsis" is rather a misnomer, for it is really a rhythmical series of reversed segmentation movements, depending largely on the degree of tension present. It serves to churn and to delay the onward passage of the food. It necessitates a true muscular sphincter at the ileo-cæcal valve, and the development of a cæcum is a corollary to its occurrence. In animals, like the rabbit and herbivora in general, where the cæcum is long, it can be filled only by the aid of anti-peristalsis. This also accounts for the fact that the emptying of the cæcum is never complete.

A NEW CONCEPTION OF MOVEMENTS OF ALIMENTARY TRACT.

Keith has provided us with a new conception of the movements of the alimentary tract. He divides the alimentary canal up into a number of neuro-muscular sections, each section being cut off from its neighbour by a sphincter which effectively blocks the passage of contraction waves and prevents them spreading from one section into the next. As in the heart, probably each section is provided with a special centre or "pace-maker" where the impulse arises that starts the rhythm of that section. Four of these centres are actually known.

He has likened the alimentary tract to a railroad divided into block sections, each provided with its signalman and telephonic apparatus. The signalman of one section refuses to accept any further traffic until his section is clear; all the sections are closely correlated, if one is blocked the others too become automatically blocked. He divides the sections as follows:—

1. The pharyngeal section, ending in a sphincter at the upper end of the œsophagus.

2. The cardiac sphincter marks the end of the œsophageal section, and just beyond it lies some nodal tissue which acts as the pace-maker for the movements of the stomach.

3. The gastric section ends at the pylorus, but the pace-maker for the duodenal section is not reached until just above the entrance of the bile-duct. This fact is interesting in view of the close functional and pathological relations between the stomach and the acid area of the duodenum.

4. The duodeno-jejunal junction is marked by another sphincter, with its special nerve-supply. There are three peritoneal bands lying to the right of the duodeno-jejunal flexure, each containing a branch of the vagus and splanchnic fibres going to this and the next two sphincters.

5. The ileo-cæcal valve is really provided with a long sphincter immediately above it, as shown some years ago by Elliot. This is supplied by the second branch.

6. There is a sphincter with the third of these special nerve supplies in that part of the transverse colon which lies below the pylorus. This marks the end of the part of the colon in which anti-peristaltic waves may occur.

7. At the junction of the pelvic colon with the rectum is another sphincter. This corresponds with the point at which the intestinal contents are held up in a normal person. As soon as the fæces pass beyond this point, the defæcation reflex should be excited, though if this is neglected, the rectum may become unduly tolerant of the presence of fæces, with resulting atony of the rectum, as in one common and troublesome type of constipation.

8. Finally, the alimentary tract is closed by the anal sphincters.

This conception of the alimentary tract explains, as we shall see, many of the observed disturbances of the mechanical side of digestion. An irritable focus in any section disturbs the onward progress of the food, by causing a spasm of the sphincter immediately above, and often indirectly of sphincters some segments higher up.

We can express the motor disturbances of the alimentary tract under the heads of irregular and exaggerated contractions, tonic spasms, and atony. Irregular and exaggerated contractions are due to irritation of the para-sympathetic, and, when in the vagal area, produce colic, when in the pelvic area, tenesmus. Tonic spasm and atony are both due to sympathetic irritation, which may express itself in excess of normal movements—spasm due to constriction of sphincters—or in defect—as atony—due to inhibition of normal movements, as seen in atonic dilatation of the stomach and in intestinal stasis.

ŒSOPHAGEAL AND GASTRIC SPASM.

With this general preface we can proceed to discuss certain motor and secretory disturbances of digestion, more especially those associated with the sympathetic nervous system.

Œsophageal Spasm.

The œsophagus appears to differ from the rest of the alimentary tract in that both motor and inhibitory supply are para-sympathetic in origin. I have been quite conscious of the existence of Keith's first sphincter in passing the œsophagoscope. In a case of new growth near the cardiac orifice, a tight ring of constriction was encountered at this point, yet at the subsequent post-mortem there was nothing to be found there.

Globus hystericus is considered to be spasm of the œsophagus in its lowest degree; an actual point of constriction may pass up and down in a kind of peristaltic wave.

I recently saw an extreme condition, apparently, of this kind in a discharged soldier. He stated he was unable to swallow more than half a tablespoonful of the bismuth emulsion, and X rays showed a general spasm of the whole of the upper part of the œsophagus, yet no organic disease was found, and he must have been able to swallow some food, for he increased in weight. On re-examination he was told he would have to continue his attempts to swallow the bismuth until some reached the stomach. The next mouthful passed easily and quickly the whole length of the œsophagus.

One must be cautious, however, about considering œsophageal spasm as purely functional, as it is so frequently excited by organic disease. Thus it is well recognised that the obstruction in new growth of the œsophagus is largely due to the associated spasm.

A good example of this I recently saw in a man of 63, who had dysphagia, anorexia, and wasting. I suspected malignant disease of the stomach, but X rays merely showed a spasm at the lower end of the œsophagus, and the test meal showed 0·12 per cent. HCl, an amount which might be thought much too high to be compatible with malignant disease of the stomach. Yet a little later when X rays were repeated there was distinct irregularity of outline in the upper part of the stomach, and soon an obvious mass was palpable there. Occult blood was present at every examination of the stools, and the course of the disease and its fatal issue accorded with the diagnosis.

My point is that the œsophageal spasm was the earliest objective evidence of organic disease in this case.

Cardio-spasm.

Hurst has pointed out that the so-called cardio-spasm is not an active spasm of the cardiac sphincter, but a failure of that sphincter to relax. He therefore suggested the term *achalazia* as a more accurate description. This is not merely a distinction without a difference, for he showed that a mercury tube could find its way into the stomach by its own weight. But I think we may conclude that this failure to relax is produced by just the conditions which excite true spasm in other parts of the alimentary tract, for, as he says, it is usually secondary to organic disease lower down. In one very severe, and ultimately fatal, case of mine an organic hour-glass contraction was found in the stomach as well. Keith's comparison with the block system therefore applies.

It may be that this peculiar reaction of the cardiac sphincter is related to its single innervation by the vagus and the absence of sympathetic supply. The spasm so commonly observed with X rays over an active gastric ulcer must be due to the vagus, as it occurs in parts to which the sympathetic only supplies inhibitory fibres. One can hardly doubt that such spasm is as definitely protective in its inception as the spasm of the muscles round an inflamed joint, and the rigidity of the abdominal muscles over an inflamed appendix. What is not, perhaps, so fully recognised is the spasmodic element in many forms of dyspepsia, where the spasm, though protective in nature, is probably a large factor in causing the pain. I may refer particularly to those forms of dyspepsia which are accompanied by hyperchlorhydria.

Pyloric Spasm.

What constitutes hyperchlorhydria? In its strict sense it means that if we give a test breakfast of 15 oz. of tea without sugar or milk and two slices of dry toast, and then withdraw the contents at the end of an hour, the total acidity exceeds the normal 0·2 per cent. HCl. But this might arise in one of two ways: either there is over-secretion of hydrochloric acid or there is a delay in the escape of the gastric contents, which by prolonged stimulation of the pyloric glands, where gastric secretin is formed, may enhance acidity. In other words, pyloric spasm may produce hyperchlorhydria. And I would suggest that this spasm may be a considerable element in the pain.

Hurst has shown that the introduction of an amount of acid into the stomach far exceeding that ever met with in gastric ulcer may cause no pain at all. We must look, therefore, to something else to explain the pain. Take the case of duodenal ulcer: there is no more characteristic feature of this disease than the temporary relief of pain afforded by the taking of food. One might have supposed that this was due to closure of the pylorus shutting food off from the inflamed area. But what do we find on X ray examination? The stomach is hypertonic and the contents are propelled into the duodenum with unusual speed, the so-called "duodenal rush," so that just at the time the patient is free from pain food is passing over the ulcer. But though the stomach begins to empty quickly, subsequent examination may show that emptying has not been completed in the normal time—that pyloric spasm has supervened; and, as we know, it is at this later stage that pain returns.

REFLEX DYSPEPSIA.

For some years controversy raged over the question of hyperchlorhydria. By some it was regarded merely as a functional disorder of the stomach, while the diametrically opposite position was expressed by Moynihan when he said that hyperchlorhydria was merely duodenal ulcer masquerading in the medical wards. The truth, as usual, lies between these extremes. We recognise to-day that duodenal ulcer is only one of the causes of hyperchlorhydria. I think that the position is well expressed by Craven Moore, who calls hyperchlorhydria "reflex dyspepsia." He says:—

"The gastric functions may be disordered reflexly by a lesion situated more or less remote from the stomach itself. The two essential factors in the production of this condition are the existence of such a lesion and an increased susceptibility of the reflex nervous mechanism. These may vary indirectly. Thus some lesions, as a duodenal ulcer, may assert their existence through a nervous mechanism little more susceptible than the normal, while others, as some ileo-cæcal lesions, may remain latent until the susceptibility becomes greatly exaggerated. There is little doubt that many such cases were formerly classed as nervous dyspepsia. The chief lesions are duodenal ulcer, cholecystitis, chronic appendicular lesions, ileal kinks, chronic ileo-cæcal inflammations, cæcal and colonic stagnations, diseases of the generative organs in females, mobility of the kidneys, diseases of the central nervous system."

Sir Frederick Taylor, some years ago, aptly said, in speaking of diseases of the spleen, that the spleen was more sinned against than sinning. To a less degree, this is true of the stomach. It is, of course, a site of primary new

growth; but, apart from this, it is resistant to disease unless it is injured by eating or drinking—particularly drinking—unsuitable things, or by swallowed pus from the mouth, or by circulating toxins. In many cases of dyspepsia it is not at fault at all, it is worried by some irritable focus elsewhere.

Intermittent Gastric Attacks.

It seems unnecessary to labour the point that when gastric symptoms are strikingly intermittent the irritable focus is, presumably, outside the stomach. A more or less regularly recurrent lesion in the stomach is rather difficult to conceive. Yet what physician has not seen a case of tabes in which gastro-jejunostomy has been performed for gastric crises? On consideration, it must be clear that if a patient at times can eat freely and fearlessly of any ordinary food, and at other times rejects everything and anything, or is in pain whatever he takes, it is unlikely that the stomach itself is really at fault.

Such intermittent attacks, if at all violent in character, in my experience point most frequently to the gall-bladder or the appendix as the site of the irritable focus, and it is in just such positions that a variation in the degree of reflex irritation may most easily occur. It is still frequently stated in the text-books that gall-stones may remain for years in the gall-bladder without producing symptoms. This is generally only true if we add the limiting clause, "symptoms referable to the gall-bladder." For on inquiry it will almost always be found that such patients have had repeated attacks of so-called acid dyspepsia. A slight increase in the associated cholecystitis, a small alteration in the position of the stone, and a violent reflex irritation of the stomach is set up, with pyloric spasm.

Relation of Position of Lesion to Reflex Symptoms.

Murphy and Cannon found, after high intestinal section and suture, that for about six hours after recovery from the anæsthesia the pylorus remained tightly closed. There is a remarkable agreement between the period of delay in the discharge of gastric contents and the time required for the primary cementing of the intestinal wound. This is clearly protective, and helps to explain the spasm and the consequent hyperchlorhydria of reflex dyspepsia. It is a pathological extension of Elliot's law of the hollow viscus. Thus we see that the same condition which inhibits movements in the affected segment leads to spasm of the associated sphincter. And from Keith's conception of the alimentary canal we can understand that this spasm need not be confined to the associated sphincter, but may affect those higher up. Hence the occurrence of hyperchlorhydria from quite small irritation of the bowel in persons in whom nervous reflexes are exaggerated.

But I think we may fairly assert that the nearer the lesion is to the pylorus the more likely are reflex symptoms to occur, however stable the nervous system. Thus anyone with a duodenal ulcer will almost certainly respond with marked symptoms of reflex dyspepsia; and the same is generally true of gall-stones. With pancreatitis there is not only the reflex disturbance set up by the inflamed organ, but the hyperchlorhydria due to inadequate neutralisation of the gastric juice in consequence of diminished pancreatic secretion. The terrible pain of pancreatic hæmorrhage is no doubt mainly due to the great tension produced, but the widespread sympathetic inhibition which accompanies it is proved by the way in which it produces symptoms of intestinal obstruction.

PANCREATITIS AS A CAUSE OF ENTERALGIA.

I do not think the part played by the pancreas in producing severe abdominal pain is sufficiently realised, especially when the pancreatic lesion is chronic. More precise methods of examination, such as the combined use of X rays, test meal, and examination of the stools for occult blood, reinforced by estimation of the urinary diastase, have certainly removed many cases from the category of gastric neuroses and enteralgia to that of organic disease.

Clifford Allbutt, in the first edition of his "System of Medicine" (Vol. III., p. 481) writes thus concerning enteralgia:—

> "The most terrible of all neuralgias ..... it is usually a piercing, agonising, and prostrating pain, leading soon to symptoms of the incipient collapse which is at hand in all abdominal neuralgias."

Duodenal Ulcer Involving Pancreas.

This description was recalled to my mind when, some months ago, I was examining a man with a prolonged history of such attacks.

On palpating the abdomen I touched a spot in the epigastrium which started a train of violent symptoms. He jumped as if stabbed, raised himself in bed, and then began a series of convulsive movements. His pupils dilated and his face assumed an almost maniacal expression. The paroxysm lasted for about two minutes and gradually passed off. He sank back exhausted and appeared to lose consciousness.

Instantly I recalled witnessing a somewhat similar seizure in a patient Sir Archibald Garrod had asked me to see in the hospital two years previously.

The patient was a Belgian refugee aged 32. In his case the convulsion was tonic rather than clonic. He lay writhing in bed in the attitude of opisthotonos—the hands clenched and holding the bedclothes, the face flushed and then becoming dusky, the eyes rolling upwards. The patient appeared semi-conscious and made no response to questions. Several people who witnessed the attacks thought they were purely functional, but Sir Archibald Garrod had determined one point of interest and importance, the urinary diastase was raised to 100 units, which pointed to a pancreatic lesion. Some time after he had a severe melæna and the diagnosis was made of a duodenal ulcer burrowing into the pancreas. Mr. H. J. Waring performed a short-circuit, but the man collapsed. The post-mortem examination showed a large ragged ulcer in the duodenum, with the pancreas forming its floor.

Remembering this case, I had my patient's fæces tested for occult blood. The reaction was strongly positive and remained so at the end of six weeks. The urinary diastase was also estimated and found to be definitely raised. I therefore felt the provisional diagnosis of duodenal ulcer involving the pancreas to be justified.

He was put on a Lenhartz diet and improved greatly. The paroxysms ceased altogether. But an X ray examination showed duodenal rush and an altered duodenal cap, and the occult blood test continued to be positive. I accordingly asked Mr. H. W. Wilson to operate, and he found an ulcer on the duodenal side of the pylorus with firm adhesions to the pancreas. He performed a short-circuit, and the man has apparently made a complete recovery; he has no pain or tenderness on pressure, and he put on weight very quickly.

Soon after this, a third case came under my observation.

The patient was aged 35, and was seen in his fourth attack, the first having occurred 13 years before, the next three years before, the third six months before; so that, though few, they were increasing in frequency. The attack took the form of sudden abdominal pain, vomiting, collapse, and brief unconsciousness. X ray examination showed hypertonicity of the stomach, a distorted pyloric end to the stomach, a rapid beginning of the emptying of the stomach, but a delayed completion. There was also marked spasm of the terminal coil of the ileum and delay in the onward progress through the colon. The urinary diastase was 128 units, but the occult blood test was negative. Corresponding, then, to the infrequency of the attacks, it would appear that the ulcer is not in an active bleeding condition. His last attack was in October, 1917.

These cases have impressed on my mind the fact that intermittent attacks of very violent abdominal pain, tending to rapid collapse, with intervals of apparently normal health, should lead one to suspect chronic ulceration near the pylorus on its duodenal aspect, involving the pancreas.

Since writing the above I have seen a fourth case of the same kind.

The character of the attacks pointed to duodenal ulcer involving the pancreas. X rays showed hypertonicity of the stomach and duodenal rush. Examination of the fæces showed the presence of occult blood. The pancreatic diastase test, on the other hand, showed only 16 units—a normal figure. I therefore concluded that the clinical diagnosis of involvement of the pancreas was not correct. However, he subsequently died from septic infarcts in the spleen, and post-mortem examination showed a large ragged duodenal ulcer, the floor of which was partly condensed fibrous tissue and partly pancreas, which was in a condition of advanced interstitial inflammation. Indeed, it was surprising that there was no glycosuria with such advanced disease, and this makes the failure of the diastase test to confirm the diagnosis all the more surprising. It only shows again how impossible it is to rely on any one test.

MECKEL'S DIVERTICULUM.

Travelling down the bowel the next irritable focus for severe but intermittent attacks of acid dyspepsia and pain is Meckel's diverticulum.

Last year I had under my care in the First London General Hospital a soldier who had repeated attacks which resembled appendix dyspepsia in many respects, and yet were not quite similar. Colonel Waring explored at my request and found a Meckel's diverticulum, which he removed, with complete cessation of the attacks. Colonel D'Arcy Power tells me he has had several such cases.

APPENDIX DYSPEPSIA.

The next site of origin of these reflex attacks is the appendix. Appendix dyspepsia has attracted much attention of recent years, and demands careful consideration. The account I shall give of it is based on my own cases, which may lead to its differing from the generally-received descriptions.

Clinical Picture.

There is often a history of "gastritis" or "gastric fever" in early life, which, I believe, represents the original attack of appendicitis. The patient is usually constipated and suffers from flatulence, but there are intervals between the attacks when digestion is almost normal. There are times when the symptoms chiefly consist of hyperchlorhydria—pain two or three hours after food, pyrosis, flatulence, and temporary relief of pain on taking more food. At intervals there are severe attacks, when all food causes pain and there is much vomiting.

On examination the tongue is found to be furred, there is cutaneous hyperæsthesia to the touch of a pin and tenderness on pressure over the right iliac fossa, with perhaps resistance on deeper palpation. A characteristic point is that palpation in the right iliac fossa causes discomfort in the epigastrium. When examined with bismuth and the X rays the stomach begins to empty quickly, but usually has not completed emptying in four hours. There is delay in the passage of the bismuth along the cæcum, and as the bismuth passes there may be a break in the column, so that while the rest may be seen in the transverse colon, or even in the rectum, there is still some left in the cæcum.

The test meal may show hyperchlorhydria, but quite as frequently does not, and generally the degree of hyperchlorhydria is less than the symptoms would lead one to expect. The more the symptoms resemble those of hyperchlorhydria while the test meal does not, the more likely, in my experience, is the appendix to be responsible.

I believe the explanation of this discrepancy between the symptoms and the test meal is that the hyperchlorhydria is due in these cases simply to pyloric spasm and not to over-secretion. Generally speaking, this spasm has not come on at the end of the first hour, the time at which the test meal is withdrawn. There seems to be sympathetic inhibition of the peristaltic waves in the cæcal region owing to the proximity of the irritated appendix. This on Keith's theory establishes a block high up in the alimentary canal with resulting pyloric spasm, which, when severe, causes marked gastric symptoms.

It is generally recognised that the structural change in the appendix may be quite slight. In one of my cases showing all the signs and symptoms of appendix dyspepsia operation only revealed an appendix thickened by old inflammation in its terminal inch, yet its removal stopped the occurrence of attacks. Unfortunately this is not always the case, and I think that then the condition of the appendix is only part of a more general inflammatory change in the colon, for it is quite clear that colitis may cause hyperchlorhydria, though the attacks do not then show the marked intermittence typical of appendix dyspepsia.

Reflex Hour-glass Constriction of Stomach.

Less commonly appendix dyspepsia may cause a spasmodic hour-glass constriction of the stomach as in the following case:—

A woman, aged 36, suffered from vomiting sometimes at once after food, sometimes an hour later. The chief thing discovered on examination was a tender swelling to the outer side of the appendix. X rays showed that the movements and position of the stomach were natural. As she improved so rapidly under ordinary medical treatment it was decided not to have the appendix explored at that time. Some months after there was a return of symptoms and X ray examination on three separate occasions showed an hour-glass constriction. The test meal showed the active hydrochloric acid to be only 0·14 per cent. Sigmoidoscopic examination showed nothing abnormal, and repeated examinations for blood in the stools were negative.

Mr. Gordon Watson explored, and at the operation there was an interesting demonstration of the appearance of a spasmodic hour-glass stomach. On the stomach being explored one saw a constriction in the middle which passed off as she got more deeply under the anæsthetic. The region of the appendix was explored and the appendix itself was found to be swollen and bent upon itself and its tip adherent to the cæcum. This was removed and the patient made an uninterrupted recovery.

I regard the hour-glass constriction in this case as due to reflex spasm, and it suggests that the gastric symptoms in appendix dyspepsia may sometimes be produced in this way. It is hardly surprising in these circumstances that appendix dyspepsia is so frequently mistaken for gastric ulcer.

REFLEX EFFECTS OF LESIONS OF COLON.

Cases of spasm of the sphincter in the transverse colon (Keith's sixth sphincter) are not so common, but I can show a skiagram of one marked instance of this.

Even when the irritable focus is far removed from the stomach the reflex hyperchlorhydria may be marked.

Thus a clergyman of 43 consulted me on account of hyperchlorhydria of 20 years' duration. His bowels had always given him trouble, and of recent years he had noticed that after they had acted he felt that they had not emptied completely and the desire for defæcation remained.

Examination of the rectum showed it to be empty, but palpation over the descending colon revealed a distinct resistance which persisted after repeated enemata. It was not possible to pass a sigmoidoscope high enough to reach the point of resistance. I concluded that the resistance could not be due to new growth in view of the prolonged history and entire absence of wasting, but that it was more probably due to pericolitis sinistra, or diverticulitis as it is commonly called.

Mr. Gordon Watson operated and found that this was the case. The affected segment of the bowel was removed, and although there was considerable difficulty in closing the resulting colostomy the attacks of hyperchlorhydria ceased entirely. Some years later they recurred and a further area of diverticulitis was found by X rays and confirmed at operation by Mr. Lockhart-Mummery.

CAUSATION OF HYPERCHLORHYDRIA.

The general conclusion as to hyperchlorhydria, then, is that it is usually due to some reflex cause—an irritable focus somewhere lower down in the alimentary canal, and that the high acidity of the test meal need not mean over-secretion, but retention of the gastric contents due to pyloric spasm. The more excitable the nervous system the lower is the threshold stimulus required to initiate symptoms. Inhibition of segments of the alimentary canal and stimulation of the sphincters, both due to the sympathetic, play a large part in the production of this type.

A simple hyperchlorhydria due to over-secretion and presumably associated with over-action of the vagus, though not so common, undoubtedly exists. When the stomach empties in less than its usual time, and yet the test meal shows high acidity, there must be both increased secretion and increased motility; both of these effects would be produced through the vagus. If, in addition, X rays reveal no lesion lower down in the bowel, and examination of the stools shows no occult blood, we are justified in placing a case in this category. It is not difficult, therefore, to distinguish between the vagal and sympathetic type of hyperchlorhydria.

ATONIC DILATATION OF THE STOMACH.

Just as the sympathetic may cause spasm of a sphincter, so it may produce atony of a segment of the alimentary canal, which will naturally lead to dilatation of that segment. This brings me to consider atonic dilatation of the stomach. It is much more common than usually supposed, and it may explain many cases of chronic indigestion.

Clinical Picture.

The chief symptom is not acute pain, though in one case I found an acutely tender spot over the stomach. The patient will generally complain of a sense of depression and indefinable misery after food. He may also complain of fermentation and a sour taste. Hurst pointed out that such patients usually complain of feeling full up as soon as they

start eating—due to the fact that the dilated stomach cannot relax further as a normal stomach does when food is ingested, so that the intra-gastric pressure rises. He further pointed out that precisely the same symptom is complained of by patients with the opposite condition of fibrosis of the stomach, because here again the stomach is incapable of relaxation.

A diminished secretion of gastric juice is what one would expect, but the condition is compatible with an entirely normal test meal, as I have repeatedly found. Occasionally I have even seen hyperchlorhydria with well-marked atonic dilatation. The condition can be recognised at once with the X rays. The broad, flat-topped inert meniscus of bismuth is most characteristic and may persist for eight hours or more.

There is one fallacy, as Dr. Archibald Reid pointed out to me. An obstructive dilatation is ordinarily associated with powerful peristaltic waves, but a point may be reached where the stomach muscles, as it were, give up the struggle and remain toneless and quiescent. In view of the violent peristalsis which may be seen with an enormous degree of dilatation this may sound improbable, but not all stomachs are capable of maintaining such waves when the pylorus is obstructed, and I have had the opportunity of seeing atony follow in a case of obstructive dilatation where operation was refused. Subsequently operation was consented to, and obstruction was found. This is probably more apt to occur when obstruction takes place in old and debilitated subjects.

Within a few weeks I saw two cases, one of simple ulcer at the pylorus and one of malignant disease there. In both the stomach was dilated and atonic. Both of these were in elderly patients who had had severe pain, and no doubt this may play a part in exciting sympathetic inhibition. But such cases are, I think, not very common and should not encourage us to advise short-circuiting when atonic dilatation is found on the chance of obstruction being present also, for there is a general agreement that gastro-jejunostomy in simple atonic dilatation has disastrous results.

The Atony due to Sympathetic Inhibition.

The conventional statement is that atonic dilatation is a sequel of chronic gastritis. This may be so sometimes, but when the test meal shows a normal or even increased secretion gastritis cannot be responsible. The symptoms may, as in several of my cases, date from some enfeebling illness, particularly typhoid. If an acute infection can produce acute dilatation of the stomach, presumably a less severe, but more prolonged, toxæmia can lead to chronic dilatation. Certainly some of my cases have apparently so originated. I have noted the marked effects of fatigue in aggravating the symptoms and recent observations by Kast explain this. He found that in such persons the evacuating power of the stomach and intestines was directly affected by physical or mental effort. But I am convinced that sympathetic inhibition alone may play an important part in producing such atony.

A man, aged about 30, was admitted under my care at St. Bartholomew's Hospital in 1914 with a history of pain and flatulence half an hour after food for the previous 12 months. For the last two months the pain had not occurred till four or five hours after food. On examination there was a well-marked succussion splash and X rays showed great dilatation and atony of the stomach with the greater curvature down to the pubes. Yet the test meal showed a total acidity of 0·29 per cent., the physiologically active hydrochloric acid being as high as 0·27 per cent. He was treated by lavage with marked improvement.

In 1916 he had some acute abdominal attack for which he was admitted to the West London Hospital and immediately operated on. The position of the incision showed that the stomach was suspected as the site of trouble, but a gangrenous appendix was found and removed. I have recently had an opportunity of re-examining him. There is now no atony or dilatation of the stomach to X rays, and the test meal shows only 0·195 per cent. of acidity—i.e., a normal amount.

Here a controlling appendix would appear to have been responsible both for hyperchlorhydria and atonic dilatation. This leads me to conclude that when atonic dilatation is combined with hyperchlorhydria an irritative focus causing reflex dyspepsia and sympathetic inhibition should be looked for.

A Case Due to Anxiety Alone.

A curious example of anxiety alone apparently acting as a cause of atonic dilatation is as follows.

A young man, who was very nervous at the idea of being called up for military service, consulted me about his health, and I found on X-raying him that he was suffering from atonic dilatation of the stomach. He obtained exemption, and when I re-examined him by the X rays some three months later there was no sign of atony. Subsequently when the question of his military category again came under review there was a return of the atonic dilatation.

Such a condition cannot be simulated; it must be, in my opinion, the direct result of a sympathetic inhibition from emotional causes.

GASTROPTOSIS.

Another muscular condition which may be confused with atonic dilatation and which may interfere with the evacuation of the gastric contents is gastroptosis. It is possible also for them to coexist. Here, too, I have been struck by the frequency with which gastric secretion may remain not merely normal (which might perhaps be expected) but actually increased. I must conclude that it is due to reflex irritation from the bowel, which being also dropped is liable to various disturbances.

Many of the symptoms referred to movable kidney are due to the associated visceroptosis, and it is important to realise that some of the symptoms noted when the stomach is dropped are due to the dropped bowel.

Just as a patient's general health has an important bearing on the symptoms of an atonically dilated stomach, so it may cause a gastroptosis previously existent to assert itself. It is clear that gastroptosis must often have existed for years before producing symptoms. Some intercurrent disease may be responsible for exciting symptoms. Symptoms which do not appear till after childbirth or operative removal of pelvic viscera can be easily understood.

The X ray appearances naturally differ entirely from those of atonic dilatation. Instead of the horizontal increase in the stomach shadow we see a vertical increase.

Though the symptoms of gastric discomfort are somewhat similar, the patient with gastroptosis, if questioned, will often have noted that upwardly directed pressure on the abdomen relieves the discomfort to some extent. In such a case an abdominal support will probably afford marked and immediate relief. One patient told me that as soon as she put on the support she was able to ride a bicycle again, which she had been unable to do for two years. Another said that life seemed a different thing, and that her miserable feelings were relieved at once. But this is exceptional, and both these patients had expressed themselves as conscious of a feeling of dropping. Most patients are not conscious of this, although X rays may show marked gastroptosis. They will probably require time to become habituated to the support before they express themselves as relieved. It is clear that the support merely acts, as Hurst suggested, by raising the general intra-abdominal pressure, for X rays will show that the position of the stomach usually remains unaltered. Visceroptosis will also be benefited by such a support, and this brings me to a brief reference to intestinal stasis.

INTESTINAL STASIS.

Sir Arbuthnot Lane's work has naturally aroused much interest on this subject. The very enthusiasm with which he has advocated his views has perhaps tended to arouse opposition. Still we must admit that he has described a clinical condition which can be recognised.

The patient, usually a woman, has a loose and inelastic skin, which becomes pigmented. The breasts show chronic mastitis, often undergoing cystic degeneration. The appetite is poor and the breath offensive; there are flatulence, constipation, attacks of nausea and vomiting, and frequently abdominal pain with points tender to pressure. Depression and lack of energy, both physical and mental, characterise the state. The circulation is impaired, the hands and feet are cold, clammy, and often livid. Progressive emaciation, headache, backache, muscular pains, and aching joints are not uncommon.

Immediate and Remote Results.

As is well known, Lane attributes the condition to the adoption of the upright position by human beings, which has resulted in the dropping of the viscera. The three principal results of this visceroptosis are, according to Lane, (1) the formation of conservative adhesions along the lines of resistance to downward displacement; (2) the consequent production of "kinks" along the course of the gastro-

intestinal tract, leading to (3) stasis with delayed digestion, constipation, and auto-intoxication. Many more remote effects have been assigned to this cause, which, starting with diminished resistance to tuberculous infection, threaten to extend until every ailment and lesion are thus explained, tempting us to wonder why four-legged animals are ever ill at all.

But we may note the ingenious way in which the theory is made to account for many diseases of the alimentary tract and its annexes. The mechanical retention of stomach contents would cause them to become more acid from continued secretion which may be a factor in erosion and ulceration of the gastric mucosa. The mucous membrane of the "kinked" duodenum becomes congested and then ulcerated. Ascending infections of ducts can occur more readily when, as the result of stasis, bacteria normally confined to the large intestine ascend into the ileum, and so gall-stones and pancreatitis are explained. Lane also holds that adhesions round the appendix are more frequently the cause than the result of appendicitis. Mucous colitis is referred to similar causes, and carcinoma of the intestines is held to result from irritation due to material passing along the various "kinks" and flexures.

Mechanical Kinks or Sphincteral Spasms.

Such sweeping conclusions have naturally aroused opposition. It must be remembered that Cannon found that peristalsis was able to drive on the contents of the bowel past sharp "kinks," and in tuberculous peritonitis or malignant disease of the intestines "kinks" are formed which in many cases produce neither constipation nor stasis.

It is noteworthy that the position of most of Lane's "kinks" correspond to those of Keith's "sphincters," and it is at least possible that many of the appearances are produced by muscular contraction of these sphincters as much as by mechanical kinks. Such sphincteral spasms would be produced through the sympathetic, and general sympathetic stimulation would produce not only spasm of the sphincters, but inhibition of normal peristalsis in the segments between them. Under such conditions increased intestinal putrefaction and fermentation must result.

How the Mind Exerts its Influence on the Body.

This would account for a condition which on the mechanical view must be congenital, not producing the effects until some debilitating illness or psychical shock occurs. I have several times thought I could trace the onset of symptoms attributed to intestinal stasis to a bereavement or other psychical causes. With the removal of the cause, or the healing effect of time on the grief, the condition has appeared to clear up.

Some of the worst cases occur in women who have no employment and no object in life. The acquisition of a definite rationale for existence, whether a happy marriage, an absorbing profession, or even a political agitation, may have the most remarkable effect on the symptoms of visceroptosis. This is the type of case also where the auto-suggestion of Christian Science often achieves extraordinary results, results which surprise and may annoy the practitioner who does not sufficiently allow for the influence of the mind upon the body.

And it does seem to me that this undoubted influence of the mind on the body can be most readily explained by the action of the sympathetic nervous system, since through it depressing and disagreeable emotions inhibit the processes of digestive secretion and absorption while stimulating katabolism elsewhere. Thus the reserves of the body are spent, while the restoration of its energy and tone are prevented.

ROYAL DEVON AND EXETER HOSPITAL.—Colonel F. M. Hext has given £1000 towards the special appeal for £20,000 for the Royal Devon and Exeter Hospital. Up to the present date over £8000 has been raised.

PRESENTATIONS TO DOCTORS.—Dr. L. V. Laurie, who has practised in Moretonhampstead, Devon, for the past 22 years, was recently presented with a gold watch, suitably inscribed, as a mark of respect and esteem from friends and patients on the occasion of his retirement from active work. Mrs. Laurie received a framed water-colour sketch of Moretonhampstead.—The nurses and workers at Newton Abbot V.A.D. Hospital at a farewell gathering presented Dr. James Culross with a travelling clock in case as a mark of esteem.

LATENT INFECTION OF HEALED WOUNDS.

BY SIR KENNETH GOADBY, K.B.E., M.R.C.S., L.R.C.P., D.P.H. CANTAB.,

HONORARY BACTERIOLOGICAL SPECIALIST, ROYAL HERBERT HOSPITAL, WOOLWICH.

(Report to the Medical Research Committee.)

Bacteriology.

OPERATIONS performed on healed wounds, partially healed wounds, or fractures with sinuses, are frequently followed by a severe temperature reaction, in some instances associated with breaking down of the wound tissues, a re-establishment of sinuses, and, in bone operations, delayed healing or non-union. In THE LANCET in July, September, and November, 1916 (Reports to the Medical Research Committee), I published certain facts relating to "flares" after operation and their prevention by preliminary immunisation. I also published in THE LANCET of May, 1918, a series of observations on the bacteriology of unhealed excised and non-excised wounds admitted to home hospitals showing (1) the persistence of anaerobic organisms in such wounds, and (2) a diminution in the anaerobic flora directly attributable to the early excision of the wounds.

The present report epitomises further work on post-operative flares with special reference to latent infection in healed and unhealed wounds, comprising cavities containing metal fragments, soft tissues, sequestra, &c., removed for examination during subsequent operations. In all, 226 wounds have been studied from this point of view: 41 wounds which had healed and subsequently broken down, 20 healed wounds from which tissues were removed at operations for resection or freeing of nerves, 40 closed cavities containing metal fragments, and 12 closed wounds in which bone was excised from joints—total 113, and 113 unhealed wounds from which bone fragments were removed in either the early stages of the wound or later as sequestra.

Analysis of Bacteriological Findings.

In Table I. the cases are analysed according to the date after injury at which the examination was conducted. The case-incidence of certain bacteria is given in Table II. The grouping and methods of examination are those adopted in previous reports cited. It will be seen that a considerable number of wounds gave cultivations of anaerobic organisms of the spore-forming variety and 44 contained *B. welchii*, 17 of these being completely healed wounds and 27 open wounds.

The incidence of streptococci is given in the groups aerobic and anaerobic. 140 cases showed the presence of streptococci of anaerobic type, 89 those of aerobic type. When these figures are analysed according to healed and unhealed wounds, 57 per cent. of the healed wounds give the presence of anaerobic streptococci and only 29 per cent. aerobic. In the unhealed wounds, however, 67 per cent. give anaerobic streptococci and 50 per cent. aerobic. This separation of the streptococci found does not imply that the groups indicated as anaerobic are strict or obligatory anaerobes, but that under the conditions of the examination anaerobiosis favours the development of certain races of streptococci. In all instances cited the material examined was submitted to aerobic as well as anaerobic cultures in parallel. A somewhat significant fact emerges—namely, that healed wounds showed a higher relative incidence (57 to 29) of these presumably facultative anaerobic streptococci than did the unhealed wounds and sinus cases (67 to 50).

A further column shows the incidence of the colon-proteus group. These organisms do not appear with any great frequency in the wounds of from 10 to 100 days, but in the latter periods from 100 to 400 days, are met with more frequently.

From personal communications made to me, the presence of streptococci in recent wounds, as observed in casualty clearing stations, is not, as a rule, above 20 per cent. of the cases examined. There appears, therefore, to be some ground for supposing that at a period subsequent to the primary operation at the casualty clearing station secondary infection of the wound occurs. This is not surprising, and is in all probability entirely unpreventable, as any open

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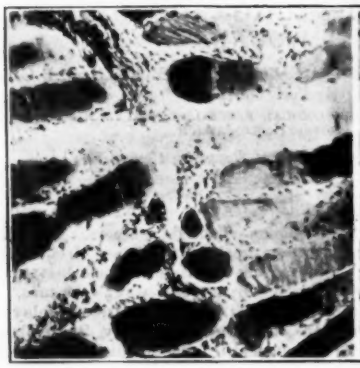

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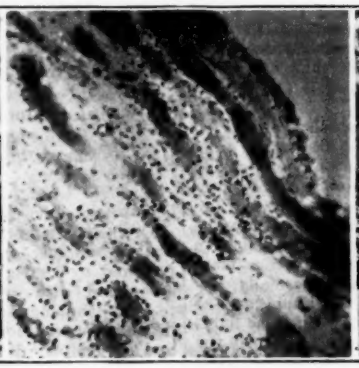

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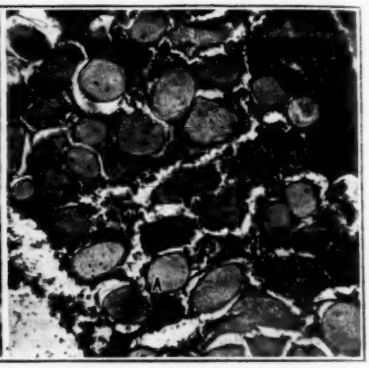

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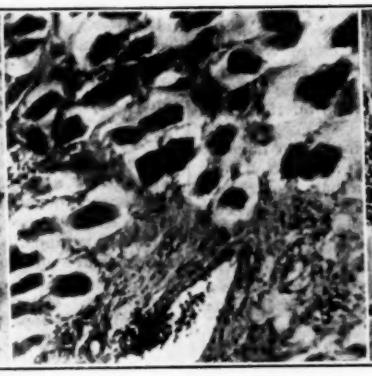

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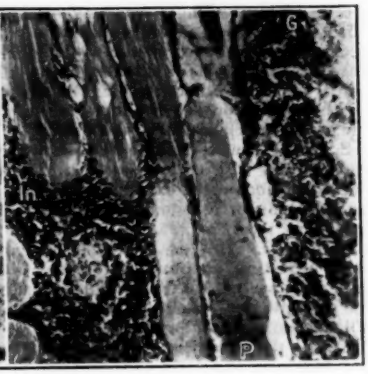

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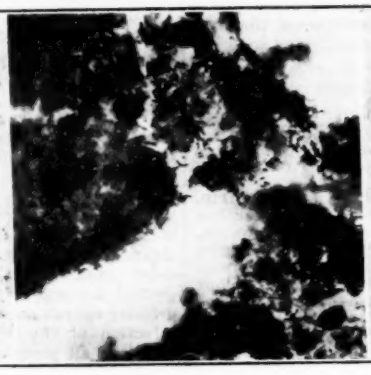

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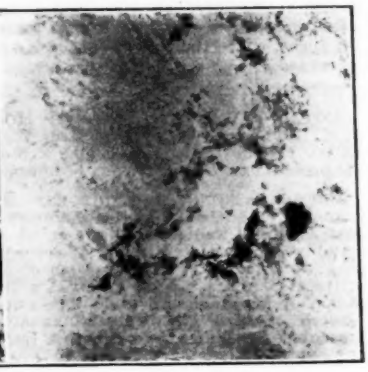

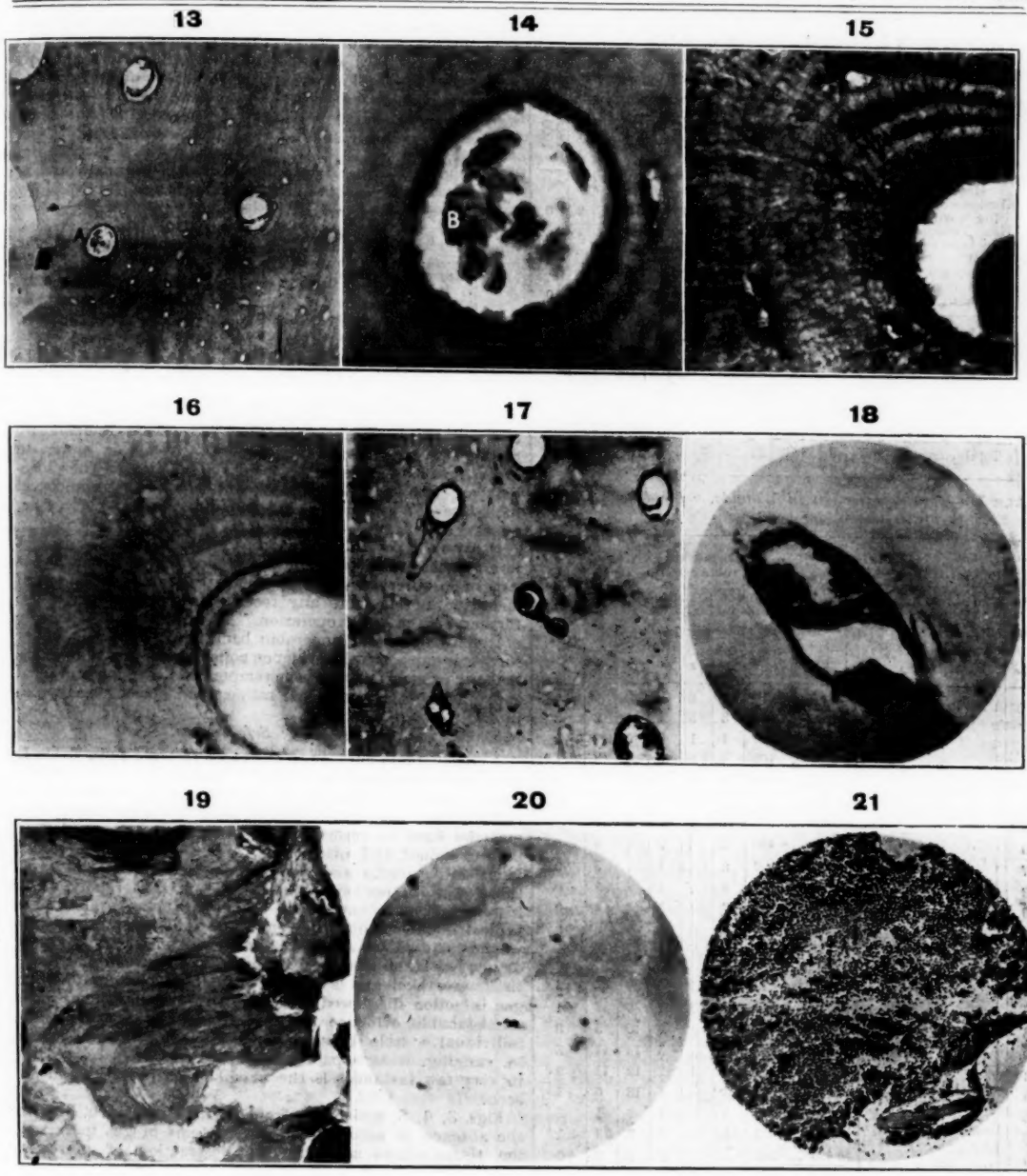

The micro-photographs are here reduced to about two-thirds scale.

FIGS. 1 and 2.—Muscle removed at operation on twelfth day after injury. Fig. 1 shows commencing repair after gas infection and rupture of muscle bundles; hæmatoxylin eosin; × 150. Fig. 2, portion of same section, showing partial destruction of muscular structure by toxins and commencing repair, taken a short distance from Fig. 1; hæmatoxylin eosin; × 150.

FIGS. 3–6.—Four sections of muscle removed on thirty-second day from a shell wound of hand. Fig. 3, transverse section, shows active repair of gas infiltrated tissue; hæmatoxylin eosin; × 150. Fig. 5, taken from Fig. 3 at A, shows phagocytosis of organisms in tissue; × 1000. Fig. 4, longitudinal section of same, tissue shows gas infiltrated muscle undergoing repair; × 150. Fig. 6, longitudinal section, active phagocytosis of causative organism; × 1000.

FIGS. 7 and 8.—After amputation of arm. Fig. 7, twenty-third day after injury, large hæmorrhage in tissue, H, and condensed fibrous tissue; M, remains of muscle bundles; hæmatoxylin eosin; × 150. Fig. 8, muscle bundles surrounded by spaces; no repair at present; commencing infiltration; hæmatoxylin eosin.

FIGS. 9 and 10.—Fig. 9, thirty-ninth day from wounding; muscle showing characteristic effect of healing gas infection: In, infiltration of gas spaces; M, normal muscle; G, muscle bundles replaced by granulation tissue; P, pale staining damaged muscle; hæmatoxylin eosin; × 150. Fig. 10, normal muscle fibre embedded in reforming tissue; large spaces in tissue, T; hæmatoxylin eosin; × 150.

FIGS. 11 and 12.—Fracture caused by fall 39 days previously, plated on third day and finally broke down. Fig. 11, edge of muscle removed from tibia near plate at operation; Gram-Weigert; × 1000. Fig. 12, showing streptococcal abscess in muscle and invasion of tissue with general loss of staining; Gram-Weigert; × 150.

FIGS. 13–16.—Four views of a "hard" sequestrum removed from fractured femur 130 days after wound. Fig. 13 shows unaltered bone structure with plugged Haversian canals, A; × 150. Fig. 14, same canal, showing organisms in the coagulated contents and in the lining of the wall of the canal; Gram-Weigert; × 1000. Figs. 15 and 16, × 1000 show wall of Haversian canal and canaliculi; in Fig. 16 organisms are present in the bone.

FIGS. 17 and 18.—Hard sequestrum from fracture of femur removed 183 days after wound. Fig. 17, plugged Haversian canals; × 150. Fig. 18, Haversian canal, marked A in Fig. 17, to show organisms in plug and canal wall; Gram-Weigert; × 1000.

FIGS. 19 and 20.—"Soft" sequestrum from head of tibia on ninety-third day. Fig. 19 shows general structure of soft sequestrum; hæmatoxylin eosin; × 150. Fig. 20, part of same specimen, showing group of organisms present in centre of sequestrum; Gram-Weigert; × 1000.

FIG. 21.—Portion of end of tibia removed P.M. 246 days after wound; shrap. bull. foot, followed by gas infection; hæmatoxylin eosin; × 50.

TABLE I.—*Latent Infection of Wounds.*

No. of cases.	Type of case.	Day of examination after wounding. 1-10	10-30	30-60	60-100	100-150	150-200	200-300	300-400	400-500	500-600	600-1000	Over 1000
	Healed Wounds.												
41	Healed wounds breaking down	0	0	0	3	5	4	10	6	7	1	5	0
20	Healed wounds, nerve operations...	0	2	3	3	0	7	4	1	0	0	0	0
40	Closed cavities, metal fragments...	0	11	0	2	4	5	13	1	0	1	2	1
12	Closed cavities, bone excision	0	1	0	1	2	3	2	1	0	0	2	0
113	Totals	0	14	3	9	11	19	29	9		2	9	1
	Unhealed Wounds.												
113	Bone fragments and sequestra removed at operations	6	19	13	19	22	15	3	9	0	2	5	0
	Totals	6	19	13	19	22	15	3	9	0	2	5	0
228	Total examinations	6	33	16	28	33	34	32	18	7	4	14	1

TABLE II.—*Latent Infection in Wounds. Incidence of Some Bacteria.*

No. of cases.	Type of case.	Day of examination after wound.	Certain anaerobic bacilli. *B. sporogenes*	*B. "tertius."*	*B. welchii.*	Streptococci. Anaerobic.	Aerobic.	Colon and proteus.
—	Healed wounds.	0 to 10	0	0	0	0	0	0
14		10 ,, 30	8	5	1	4	2	2
3		30 ,, 60	1	1	0	0	0	0
9		60 ,, 100	5	2	0	5	3	1
11		100 ,, 150	5	3	3	7	2	2
19		150 ,, 200	7	7	4	10	3	2
29		200 ,, 300	11	6	2	19	10	2
9		300 ,, 400	5	3	2	7	4	2
7		400 ,, 500	2	2	1	7	3	0
2		500 ,, 600	0	0	1	2	2	0
9		600 ,, 1000	3	2	3	4	4	0
1		1000	1	0	0	0	0	0
113	Totals...	—	48	31	17	65	33	11
6	Bone fragments and sequestra.	1 to 10	3	5	6	7	6	3
19		10 ,, 30	7	7	7	8	11	1
13		30 ,, 60	6	1	4	10	3	0
19		60 ,, 100	8	5	3	12	11	3
22		100 ,, 150	5	4	1	12	11	9
15	Unhealed wounds.	150 ,, 200	6	4	4	12	6	3
3		200 ,, 300	3	2	1	2	1	3
9		300 ,, 400	4	3	1	7	3	1
0		400 ,, 500	0	0	0	0	0	0
2		500 ,, 600	1	0	0	2	1	1
5		600 ,, 1000	1	1	0	3	3	0
0		1000 —	0	0	0	0	0	0
113	Totals...	—	44	32	27	75	56	24
113	Healed wounds.	Percentage	42	27	15	57	29	9
113	Unhealed wounds.	Percentage	40	30	24	67	50	21

wound when dressed over long periods is liable to secondary infections, even under the best conditions of modern hospital treatment.

Preponderance of Streptococci.

A particular point to which I wish to draw attention regarding the bacteriological contents of the wounds I have examined is the preponderance of streptococci present, and the figure of 57 per cent. facultative anaerobic streptococci which appeared from the healed cases. In addition to the 226 cases submitted to bacteriological analysis the clinical records of 206 cases of subsequent operation have been analysed in Table III. In 95 of these cases temperature charts were available; the temperature records of the remainder (119 cases) were obtained from the report books of the wards. The large majority of these cases were operations upon old wounds in which either sequestra were removed, nerve operation for freeing or suture of nerves were undertaken, and various bone operations. 47 per cent. of these cases (56 in 119) had severe temperature reaction lasting from one day to a week or more, in some instances followed by local suppuration. The closeness of this figure—47 per cent.—to the streptococcal incidence—57 per cent.—in two different sets of cases, appears significant.

TABLE III.—*Influence of Immunisation with Streptococcal Vaccine Before Secondary Operations.*

No. of cases.	Particulars of group.	Flare.	No flare.	Flare per cent.	No flare per cent.
	Secondary operations on healed and unhealed wounds—				
50	Vaccine cases	8	42	16	84
45	Control cases	36	9	80	20
119	Secondary operations consecutive from ward reports—no vaccines ...	56	63	47	53

Despite the presence of sporing anaerobes and *B. welchii* in my series of 226 cases, in no instance was any clinical gas gangrene observed as an immediate or remote effect of operation, nor is there any record of this symptom in the further 206 cases of operation. The question of the rôle played by the latent anaerobic bacilli in "flares" is under further inquiry, but the evidence collected appears to indicate that the primary cause of the temperature reaction and local suppuration is streptococcal rather than sporing anaerobes in origin.

Histology: Soft Tissues.

A considerable number of the cases referred to in Table I. have been submitted to a careful histological examination. The tissue was obtained at operation, a bacteriological examination was made, and, in addition, a portion of the material fixed in formalin, the bony tissues decalcified in phloroglucinol and nitric acid, and sections subsequently taken into paraffin and cut. Photographs of a number of these sections are appended to the present report. The histological examinations, of which the photographs give typical instances, have demonstrated that in practically all wounds caused by shell fragments gas infection to some degree has taken place. In none of the cases in which the tissue was taken and is illustrated in these photographs was gas infection diagnosed clinically, and yet the tissues show unmistakable evidence of gas infection, a destruction of individual muscle fibres, as evidenced by the alteration in staining, wide separation of the muscle bundles, but in very few instances is the actual presence of organisms seen.

Figs. 3, 4, 5, and 6 are from wounds in which, despite the absence of actual clinical symptoms of gas infection, the tissue shows not only the destruction of muscular bundles in the low-power section (Figs. 3 and 4), but the organisms in the interbundular spaces, proved to be *B. welchii* and *Vibrion septique* (Figs. 5 and 6). The transverse and longitudinal sections both show the round-celled infiltration by which a process of gas anaerobic infection is dealt with by the tissues; the two high-power photographs of the sections show active phagocytosis in operation. These tissues were obtained from a hand on the thirty-second day after injury.

Figs. 1 and 2 are obtained from an earlier case on the twelfth day of wounding and show the damage occurring in the tissues and the commencing proliferation of the cells. In Fig. 1 actual mechanical damage of the muscular fibres is seen already partially replaced by granulation tissue. Fig. 2 is from the same section but a short distance from Fig. 1 towards the outer edge of the damaged tissue.

Figs. 7 and 8 are portions of tissue removed from the vicinity of a shoulder-joint in which the arm was amputated. The tissue shown was removed on the twenty-third day subsequent to the amputation and at a distance from the tissues

which had been infected. Fig. 8 shows commencing infiltration. Fig. 7 the presence of a large hæmorrhage passing through the tissue.

Figs. 9 and 10 are portions of tissue removed on the eighty-ninth day in the vicinity of a simple flesh wound without bone involvement. Cell infiltration and process of healing of damaged muscular fibre is well shown.

For comparison, Figs. 11 and 12 are from a compound fracture of the tibia, due to a fall, which was plated and subsequently broke down, the infection being a pure streptococcal one. The low-power section, if compared with the healing gas infected tissues, shows a remarkable difference, and the high power exhibits the infection with the streptococci and the difference in the tissue reaction between this and the healing anaerobic infection.

The point of practical importance in the healing of gas-infected tissues is the spaces left between the bundles and in the gradually forming fibrous tissue in which organisms remain latent.

Histology: Bone.

Two types of sequestra are recognisable, histologically and clinically, to which the terms "soft" and "hard" may be applied. The hard sequestra are commonly portions of hard bone split off at the original injury.

Figs. 13, 14, 15, and 16 are portions of a sequestrum removed 130 days after injury. Fig. 13, low-power magnification, shows typical bone formation with partially blocked Haversian systems. Fig. 14 is a high-power magnification of the Haversian canal marked A in Fig. 13 and shows distinctly, B, the presence of bacteria lying in the coagulated tissue of the canal and attached to the walls. Fig. 15 is a high-power magnification of the canaliculi in the region of the canal marked A, stained hæmatoxylin eosin, and Fig. 16 is the same section stained to show the presence of organisms which seem to be lying in the bone surrounding the Haversian canal.

Figs. 17 and 18 are those of another hard sequestrum removed 183 days after injury. The same blocking of the Haversian canals and the presence of the bacteria in the occluded canal is seen.

Figs. 19 and 20 are those of a soft sequestrum removed 93 days after injury and enclosed in bony cavity. The tissue here has lost its original structure, but the high-power photograph shows a mass of organisms lying in the centre of the disintegrating tissue.

Figs. 21 and 22 are portions of a tibia obtained post mortem 246 days after injury. The case died of generalised streptococcal septicæmia. Streptococci were obtained from the heart-blood, and the section shows a portion of the bone removed from the inner part of the tibia, and the high power the organisms situated in the middle of the granulation tissue. The tibia had been amputated 220 days previously for gas infection of the foot.

Many other illustrations could be adduced to show the persistence of bacteria both of anaerobic bacilli and streptococci in tissues removed from the healed wounds. Reference to Table II. shows that bacteria are recoverable from a large number of these wounds up to as long as 1000 days after wounding.

Immunisation previous to Operation.

In view of the high percentage of cases of latent infection discovered an effort has been made to control the flares arising from operating on such cases by preliminary immunisation. Autogenous vaccines for each case is a matter of practical impossibility, and a polyvalent vaccine has therefore been used, prepared from as many strains of streptococci as possible obtained from latent infection, grown on human blood, and sensitised with polyvalent streptococcal serum.

A number of cases have been immunised previous to operation and control cases of similar type observed at the same time in the same wards. Ninety-five such cases have been observed; 50 of these received vaccine immunisation previous to operation; 45 received no immunisation.

Of the 50 cases immunised 8—that is, 16 per cent., developed temperature reactions subsequent to the operation, 42—that is, 84 per cent., maintained a normal temperature, and the wounds healed without disturbance.

Of the 45 unimmunised cases, 36 showed temperature reactions, and only 9 of the 45 cases which received no immunisation were unattended by subsequent temperature reaction, giving, therefore, a difference of 9 out of 45 "no flares" for the non-vaccine cases and 42 out of 50 for the vaccine cases—a considerable advantage to the immunised type of case.

Further, 119 cases were collected from the ward records in which no vaccine had been administered, and of these 119 cases 56 developed temperature reactions. In some cases the wound broke down following the operation.

22

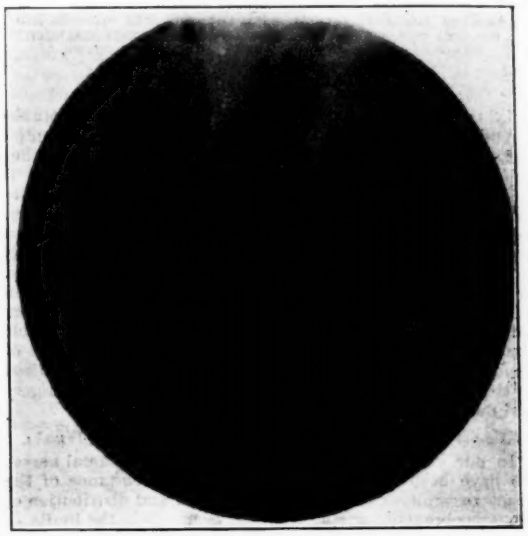

FIG. 22.—Same specimen as in Fig. 21, showing streptococci in the tissues A, B, and C. Gram-Weigert. × 1000.

Conclusions.

The foregoing short summary of my investigations into latent infection in gunshot wounds may be briefly summarised in the following conclusions:—

1. That healed gas infection is an extremely common occurrence and a serious factor in the promotion of latent sepsis.

2. That anaerobic infection, though persistent in a large proportion of wounds, does not commonly give rise to secondary gas infection subsequent to operation.

3. That the chief cause of temperature reaction, breaking down of wounds at subsequent operations on both healed wounds and sinus cases, which operation was undertaken for the removal of sequestra, may be attributable to certain types of streptococci of facultative anaerobe habit, which have been demonstrated as lying present in wounds for very long periods.

4. That the use of immunisation to the streptococci previous to operating on healed and semi-healed wounds, or the removal of sequestra, very greatly diminishes the risk of temperature reaction and subsequent breaking down of the tissues operated on, and I would strongly recommend the routine adoption of streptococcal vaccine in the preparation of wound cases for subsequent operation, especially those involving bone section.

CREMATION SOCIETY OF ENGLAND.—The annual report of this society for the year 1918 shows that the number of cremations at Woking was 142, as compared with 129 in the preceding year, whilst the corresponding figures for Golders Green were 820 and 719. The total number of cremations for Great Britain during 1918 was 1795, against 1515 for 1917, every crematorium having returned an increase in cremations. Through the courtesy of the editor of "Hazell's Annual and Almanack" the council are able to record that the United States of America had 70 crematoria in 1918, and that 13,226 cremations were carried out in that country during 1917. The statement of accounts of the society, which is philanthropic and self-supporting, shows a balance of £465 of ordinary income over expenditure.

FARADIC STIMULATION OF NERVE AND MUSCLE DURING OPERATIONS.

BY HARRY PLATT, M.S. LOND., F.R.C.S. ENG.,

CAPTAIN, R.A.M.C. (T.); HON. SURGEON AND SURGEON IN CHARGE, ORTHOPÆDIC DEPARTMENT, ANCOATS HOSPITAL, MANCHESTER; ORTHOPÆDIC SURGEON IN CHARGE, SPECIAL MILITARY SURGICAL SECTION, 2ND WESTERN GENERAL HOSPITAL;

AND

E. S. BRENTNALL, M.B. MANCH., F.R.C.S. EDIN.,

ASSISTANT SURGEON, SPECIAL MILITARY SURGICAL SECTION, 2ND WESTERN GENERAL HOSPITAL; MEDICAL OFFICER IN CHARGE, MASSAGE AND ELECTRO-THERAPEUTICAL DEPARTMENT, ANCOATS HOSPITAL, MANCHESTER.

IN the operative exploration of peripheral nerve trunks direct faradic stimulation of the exposed nerve is an essential feature in an efficient technique. The information thus supplied is of a comprehensive nature. Not only is it possible to determine the presence or absence of conductivity in the nerve above and below the lesion, but, in addition, details of intraneural topography can be investigated, and this is of especial importance in dealing with lesions which involve a part only of the cross section of a nerve trunk. When several nerve trunks are exposed at the same time, in a limb in which the normal anatomical landmarks have been lost owing to extensive scarring and destruction of muscle tissue, faradic excitation often provides a ready means of identifying each nerve. These facts are, perhaps, recognised by the majority of surgeons engaged in reconstructive surgery and need no further elaboration.

Value of Identification of Motor Branches of Nerve Trunks.

In our experience of 340 operations on peripheral nerves we have been impressed by the extreme importance of the exact recognition of the point of origin and distribution of muscular branches arising from nerve trunks in the limits of the operation field. The use of faradic stimulation renders possible the identification of each branch exposed and the confirmation of its physiological integrity. Such information is invaluable.

The classical anatomical text-book descriptions of the number and position of the motor branches of nerve trunks can be tested, if necessary, amplified or totally refuted—a true example of the investigation of the anatomy of the living—and in an end-to-end suture operation a record of its exact site can be made with reference to the motor branch proximal and distal to the line of suture. The accuracy of the future clinical examinations of a recovering nerve depends to a considerable extent on an authoritative record of the operation findings, and particularly on a knowledge of the relation of the level of the lesion and its repair to motor branches which have been identified.

The anatomical or physiological integrity of muscular branches may be endangered in the course of an operation, either by accident, which implies carelessness or a lack of knowledge of anatomical minutiæ, or with deliberate intent. End-to-end suture in extensive lesions is achieved only after free longitudinal exposure of the nerve trunk, and this often demands considerable displacement of, and tension on, muscular branches; this is especially marked when a nerve trunk is displaced far from its normal bed—e.g., in the well-known manœuvre of displacement of the ulnar nerve in front of the internal epicondyle. In a few cases, even after this procedure, the gap is so great that end-to-end apposition can be effected only after division of one or more branches proximal to the gap. By the physiological experiment of direct stimulation of these muscular branches a scientific control is provided; the choice of the correct branch for sacrifice and the conservation of the remaining branches is in this way ensured.

Observations of Practical and Scientific Interest.

The relation of muscular branches to isolated "adhesions" between nerve trunks and muscle bellies, and to the sprouting masses of nerve fibrils which are found binding nerves to muscles, has both a practical and scientific interest. On several occasions we have identified motor branches in what appeared to be isolated adhesions, and we would emphasise the value of stimulating such tissue before freeing a nerve widely. At the same time the extensive perineural adhesions encountered at levels where motor branches are unknown and presenting the physical appearance designated as "nerve callus" (Cone) are invariably silent on direct stimulation. In our earlier operative work on nerve injuries the possibility of the occurrence of spontaneous neurotisation of a muscle belly by the outgrowth of axons into the muscle fibres after an injury to a nerve trunk was considered, in view of the suggestive experimental work of Heineke, Erlacher, and Steindler,[1] on the neurotisation of paralysed muscles. The negative results of the stimulation of neuro-muscular adhesions in a large number of operations have caused us to rule out the possibility of this phenomenon.

In addition to observations on the conductivity in a nerve trunk and its branches, the direct response of the muscle bellies exposed in the wound is to be noted; this includes muscles supplied by nerves other than the one presenting a lesion. Intramuscular and perimuscular scarring and actual loss of muscle substance accompany peripheral nerve injuries in so many cases that the response or lack of response to faradic stimulation of a given muscle is information which helps to complete an adequate conception of the physiological and pathological anatomy of the tissues explored.

So far we have dealt with the mere presence or absence of response in nerve and muscle. A quantitative estimation of the results of stimulation is not easily arrived at, but using the technique described below, we have evolved a rough personal comparative standard of nerve and muscle response as the result of careful observations on a large series of cases. In this connexion we have found that in nerve lesions presenting the clinical syndrome of causalgia, excepting those in which a sufficiently gross intraneural lesion has produced a block in a motor fasciculus, the nerve trunk and the muscles supplied by it, both above and below the lesion, show a striking degree of hyper-excitability.

In operations for infantile paralysis the use of faradic stimulation is equally valuable, and the information gained as to the exact response in muscles which are to be used or discarded in such operations as tendon transplantation or tenodesis is complementary to that derived from clinical examinations and the conventional external electrical tests.

Technique of Faradic Stimulation.

We have used the bipolar method in preference to the unipolar method, the outstanding objections to the latter being the tendency to diffusion of the current and the inconvenience of using an indifferent pad electrode, which must be fixed and maintained in position outside the sterile operation area. On the other hand, bipolar stimulation, employing fine-pointed electrodes closely approximated, permits extreme accuracy in the localisation of the stimulus—an essential feature in the investigation of nerve topography and in dealing with fine motor branches.

A simple bipolar instrument consists of two small surgical probes sharpened down to fine points at one end, covered with rubber tubing, except at the extremities, and bound together by a few turns of linen thread, with a small wooden wedge intervening to ensure stability. Rubber-covered rheophores are fixed by binding screws to the proximal ends of the probes, which are bent in an outward direction. The whole apparatus thus assembled is sterilised by boiling, dried between sterile towels—an important step—and is then ready for use. During the application of the stimulus the electrode is held by a Lane's forceps or other form of clamp.

For the provision of the current a Bristow faradic coil serves admirably, the strength of current used being minimal. As the variations in intensity from time to time are probably small and the resistance of the electrode in a dry wound fairly constant, with repeated observations a comparative standard of nerve and muscle response can be developed.

In conclusion, we would emphasise the great value of observations made in the fullest detail on the response of nerve and muscle tissue to direct faradic stimulation at the time of exploratory operations. The information thus gained cannot be acquired with certainty, or in many instances is not available from any other method of investigation.

[1] Heineke: Centralblatt f. Chir., 1914, xli. Erlacher: Zeitschrift f. Orthop., Chir., xxxiv.; Amer. Journ. Orthop. Surg., July, 1915. Steindler: Amer. Journ. Orthop. Surg., July, 1915.

Dr. Saint René Bonnet has resumed his thermal practice at Chatel-Guyon-les-Bains, Auvergne, France, on demobilisation from the French Army.

THE USE OF A VACCINE IN THE RECENT EPIDEMIC OF INFLUENZA.

BY F. T. CADHAM, M.D.,
MAJOR, C.A.M.C.

IT was in the first week of October, 1918, that cases of the pandemic influenza occurred in Winnipeg—that is, the first cases recognised as typical of the disease. The epidemic progressed rapidly, it reached its peak in the second week in November, and then slowly but gradually subsided.

With the knowledge that the disease was to reach us, methods were considered of combating it. The information to be derived at the time was meagre. Quarantine and isolation methods appeared uncertain in effect and the value of prophylactic methods was not established. It seemed, however, to be an outstanding feature that infections of the respiratory tract were coincident with the disease and accounted largely for the mortality. It was considered advisable to use a vaccine prepared from micro-organisms infecting the respiratory tract of those suffering from the disease, as a prophylactic against respiratory infection.

Bacteriology.

Naso-pharyngeal.—Naso-pharyngeal swabs were taken from 128 cases at different stages of the disease. Direct smears were made and stained, and cultures were made on hæmoglobin-agar. The following were the predominant bacteria found: Streptococcus, 106 cases; pneumococcus, 18 cases; *B. influenzæ*, 23 cases; Friedländer's bacillus, 6 cases; staphylococcus, 24 cases.

Sputum.—Smears made from the sputum of 18 cases showed a Gram-positive diplostreptococcus in 16. Cultures from sputum taken from 6 patients suffering from pneumonia showed in 5 a diplostreptococcus, and in 1 a streptococcus and pneumococcus. Free expectoration in the cases of pneumonia that developed in the military was uncommon.

Empyema.—Examination of the pus from 5 cases of empyema showed in 4 streptococcus, and in the fifth a streptococcus and a pneumococcus.

Blood cultures.—Positive findings were obtained in 4 out of 22 blood cultures. These 4 showed a characteristic diplostreptococcus; 2 of these positive cases were in the acute stages, 1 was a case complicated by pneumonia, and in 1 the culture was positive ten days after the acute symptoms had subsided. This patient had developed a phlebitis in the leg. The blood was collected in a vacuum tube with a culture medium of 1 per cent. glucose bouillon, to which had been added 2 per cent. sterile sheep's serum.

Post-mortem.—A streptococcus was found in the lungs and blood of one case, and a pneumococcus and staphylococcus in the lungs of another.

Fæces.—In the examination of the fæces of 8 cases a diplostreptococcus similar to that found in the pharynx was isolated in 4.

In August, previous to the outbreak of recognised cases of influenza, there had occurred at the Tuxedo Military Hospital 2 cases of pneumonia, followed by empyema. I now believe from a study of their history these cases to have been originally influenza. At the time a pure culture of streptococcus was obtained from the pus of both these cases. A small amount of vaccine was made from this culture, and four of the members of the laboratory staff were inoculated. Examination in two of those inoculated showed increased opsonic index for this streptococcus. This increased opsonic index persisted for four months in one case in which the examinations were continued.

The predominant micro-organism thus found has been a streptococcus or diplostreptococcus. This is a Gram-positive streptococcus appearing in either short or long chains. It is pleomorphic. The same micro-organism will appear at different intervals of cultivation as either a streptococcus or diplostreptococcus. No capsule was demonstrated. It is hæmolytic on first cultivation, but loses this power on subcultivation. Cultivated for some days in serum-glucose bouillon it assumes a lanceolate shape. It forms discrete colonies on hæmoglobin agar and confluent colonies on agar to which the blood had been added at 80° C. Grown in serum-glucose bouillon it forms a diffuse cloud. It coagulates litmus milk with acid formation in 72 hours and ferments lactose. It does not ferment inulin. The agglutination reactions with Types I., II., and III. antipneumococcus serums were negative.

Preparation of the Vaccine.

For the use of members of the C.E.F. a vaccine was prepared as follows:—The strain of streptococcus obtained from an empyema that occurred in August was added to two strains of streptococci obtained from the naso-pharynx of soldiers who arrived from the East suffering from the disease on Oct. 1st, 1918. From time to time strains of streptococci were added; these were taken from the naso-pharynx and one strain from blood culture and one from the lungs post mortem. One strain from the pharynx gave cultural characteristics of the *Streptococcus viridans.*

The streptococci were grown in 1 per cent. glucose bouillon to which 2 per cent. of laked sterile sheep's blood had been added. Strains of pneumococci were obtained from the naso-pharynx and sputum of the cases at the same time and grown in similar media. A strain corresponding to Type No. III. was not obtained. After 18 hours' incubation the cultures were centrifuged in deep tubes at high speed for half an hour. The supernatant fluid was poured off and the bacterial deposit of the tubes was diluted with normal saline and pooled. A dilution was made of the streptococci to give 1800 million per c.cm. and dilution of the pneumococci to give 900 million per c.cm. as by hæmocytometer count.

The influenza bacillus obtained from the naso-pharynx of the first cases to arrive was used; it was grown in flasks of solid media. Hæmoglobin agar was made by adding 20 c.cm. of sterile sheep's blood to 1 litre of agar at a temperature of 80° C. This did not make a sightly medium, but the influenza bacillus grew freely on it. The flasks were incubated two days before using to test sterility. The culture was carried in Löffler's blood serum tubes to which had been added 2 c.cm. of serum glucose bouillon, the contents of one tube sufficed to seed a flask. Cultivation was carried out for 24 hours at 37·5° C. The growth was washed off with normal saline and filtered through sterile gauze. It was centrifuged and the bacterial deposit pooled and diluted with a normal saline solution, to give a count of 1200 million per c.cm. This was judged by the turbidity of a standard suspension. The saline suspensions of the streptococci, pneumococci, and influenza bacillus were mixed in equal parts, and 0·2 per cent. trikresol added. After bottling in rubber-capped, sterile bottles, the vaccine was sterilised for a half-hour at 60° C. Sterility was tested by inoculation of media and guinea-pigs.

The dose was 0·5 c.cm., containing approximately 300 million streptococci, 200 million influenza bacilli, and 150 million pneumococci. Preliminary inoculations were carried out on the staff of the laboratory to determine size and interval of doses.

Inoculations.

With the permission of Major-General Fotheringham, C.M.G., D.G.M.S., the soldiers of the district were inoculated under the direction of Colonel Webster, A.D.M.S. The inoculation was voluntary.

The first inoculations were given on Oct. 20th, 1918, and a second inoculation seven days later. There were some 7600 soldiers in the district at the time and 4842 were inoculated once; about half of these were inoculated twice. In anticipation of an outbreak there had been established a special military hospital for the purpose of receiving such influenza cases as might develop. This hospital was under the charge of Captain D. A. Macdonald, C.A.M.C.

From Oct. 1st, 1918, to Feb. 28th, 1919, 520 soldiers were admitted to this hospital suffering from the disease.

Clinical Diagnosis.

The onset was, as a rule, sudden. The soldiers complained of general depression. In all the cases there was an initial chill or chilly sensations. Pains in the back and legs were common and more severe on the second day. Headache was a direct initial symptom, especially so in the latter stages of the epidemic. Sore-throat was a common complaint. The throat was dry and congested. A dusky appearance of the face and congestion of the conjunctiva were common. Some cases exhibited a coryza. A loose cough developed with the disease. Nose-bleed occurred in about one-third of the cases. In all cases the temperature rose rapidly to at least 101° F. The pulse-rate was from 90 to 120.

Statistics of the Hospital.

Of the 520 cases admitted, 282 had been inoculated with the vaccine and 238 were uninoculated. There was a total of 58 cases of pneumonia and 22 deaths. Among 282 inoculated 17 developed pneumonia and 5 died. Of the 5 that died 3 had received their first inoculation on the day they were admitted to the hospital. One developed the disease three days subsequent to the first inoculation and 1 ten days subsequent. The latter soldier was suffering from tubercular glands of the neck.

No soldier died who had been admitted subsequent to the second inoculation.

Among the 238 admitted who had not been inoculated with the vaccine there occurred 41 cases of pneumonia and 17 deaths.

TABLE I.—*Report of Military Hospital for Influenza.*

—	Admissions.	Pneumonia.	Deaths.
Inoculated	282	17 ... 6·05 %	5* ... 1·7 %
Uninoculated ...	238	41 ... 17·1 %	17 ... 7·1 %

* Of these 5, 3 received their first inoculation on day of admission.

Captain D. A. Macdonald states that the disease and complications were not so severe in the inoculated. The average stay in the hospital of a patient was twice as long for the uninoculated as for the inoculated.

The cases came from the troops in the district, except for 40 cases which were taken from troop trains passing through Winnipeg. The troops were quartered in barracks throughout the city, in military hospitals, and some at their homes. Cases developed in all quarters.

The inoculations were carried out two weeks previous to the peak of the epidemic in the city. The incidence of admissions into the hospital followed closely the curve of the epidemic in the city.

Conditions of exposure were practically the same in all the barracks, and were no different for the inoculated and the uninoculated, except in the 40 cases which developed the disease on troop trains. Both the inoculated and uninoculated were admitted to the hospital at all stages of the epidemic.

A quarantine was placed on the barracks following the placing of a ban on public gatherings in the city. As the business of the district required to be carried on absolute quarantine was not considered. Cases developed in all barracks and the military hospitals irrespective of the quarantine. The quarantine was lifted a week before Christmas and the men allowed leave. They scattered through all the infected districts of the city and province, with no increase in the incidence of influenza among them.

Inoculations in the Civilian Population.

Under the direction of Dr. Gordon Bell, chairman of the Manitoba Provincial Board of Health, there were prepared in the same laboratory 600,000 doses of vaccine for the use of civilian practitioners. This was supplemented by 100,000 doses prepared by Dr. Boyd, pathologist of the Winnipeg General Hospital. The vaccine was distributed to physicians of Winnipeg and throughout the West.

Approximately one-quarter of this vaccine was prepared as before stated; the balance contained strains of bacteria as obtained from Dr. E. C. Rosenow, of the Mayo Clinic, Rochester, Ill. The dose of this vaccine was 0·5 c.cm., containing approximately 300 million pneumococci, 200 million influenza bacilli, and 150 million streptococci. A second dose was advised.

Reports were received from 108 physicians at various points in Manitoba and Saskatchewan. These reports are summarised in Table II.

To the question, "Do attacks of influenza appear to be modified if contracted following one or more injections of the vaccine?" 101 physicians out of 108 reporting replied in the affirmative. There was no definite report of the vaccine being valuable in the treatment of influenza or pneumonia.

In reply to the question, "Since influenza and pneumonia have been fatal in such large percentage of pregnant women, has vaccine apparently afforded protection?" 32 out of 37 physicians answering this question answered in the affirmative.

TABLE II.—*Incidence of Disease and Mortality in Civilian Population.*

(A) Number of persons inoculated—once, 28,815; twice, 24,184. Total, 52,999.
(B) Number of uninoculated in clientele of physicians reporting, 85,961.

Incidence of—	(A) Inoculated.			(B) Uninoculated.
	After first inoculation.	After second inoculation.	Total.	—
Influenza ...	2843, 9·7 %	2360, 9·7 %	5203, 9·8 %	21,285, 24·8 %
Pneumonia.	177, 0·65 %	123, 0·50 %	300, 0·57 %	1869, 2·2 %
Deaths ...	61, 0·21 %	24, 0·09 %	85, 0·16 %	563, 0·66 %

The majority of these inoculations were given in the earlier stages of the epidemic, but no attempt was made to keep accurate statistics on this point. The ages of those inoculated were not obtained. Due to the exigency of war the profession was depleted and all branches were forced to work under a great strain; also the people were nervous, so that it was difficult to obtain full statistics or to divide any portion of the population in two parts for the purpose of running controls.

These records, as indicated in Table II., show that the incidence of pneumonia was about four times as great, and the mortality rate was four times as great, in the uninoculated as in the inoculated.

Comment.

It is a difficult matter to estimate the value of prophylactic vaccine as used in this epidemic of so-called influenza. Bacteriological findings show that the kinds and strains of bacteria found complicating the disease vary in different districts, and even at different stages of the epidemic in the same district. The disease is known to vary in severity in localities not widely separated geographically and during different stages of the epidemic in the same localities, so that in estimating the value of a vaccine these facts should receive careful consideration.

I believe the vaccine used as a prophylactic for the military personnel of this district to have been of value. The incidence of pneumonia was less than one-half and the mortality rate less than one-third in the inoculated as compared with the uninoculated admitted to the Special Military Hospital under similar conditions. The mortality rate for the city for the period of time under consideration was 6·28 per 1000; 53·6 per cent. were males, and 75 per cent. of these were at the age known as military age. The mortality rate of the soldier in the city for the same period of time was 2·5 per 1000.

The statistics obtained from the physicians as to the use of the vaccine in civil practice appear favourable.

Winnipeg.

BLACKWATER FEVER.

BY J. P. WILLIAMS, M.R.C.S., L.R.C.P. LOND.

DURING the past four years ten cases of blackwater fever have been under my care in hospitals on the Gold Coast. The previous history of the cases showed without exception (1) that they had never taken quinine as a prophylactic according to any recognised system, although each had resided several months in an endemic area; and (2) that each of them had for some three to six months preceding the onset of blackwater fever suffered from repeated attacks of malaria, but had either "treated" themselves or neglected to carry out the instructions of their medical attendant.

Treatment.

The treatment I employed in these cases may be summed up as follows: (1) careful nursing; (2) drugs; (3) vigorous hydrotherapy; (4) precautions against heart failure, particularly during convalescence; (5) invaliding.

In addition to the ordinary four-hour temperature chart it is of great importance to keep a chart of the total volume of all fluids administered to and excreted by the patient. The urine in particular should be accurately measured and specimens of each portion passed put in a series of labelled test tubes kept where they are not visible to the patient. A blackwater case is invariably in a state of great mental anxiety, and every precaution should be taken to prevent

him from seeing his urine. For this reason, also, enamelled or earthenware urine bottles are preferable to those of glass.

The patient should never be left without a competent attendant, and the necessarily frequent operation of changing clothing and bedding performed with as little disturbance and exposure as possible.

Drugs.—Immediately upon admission the patient was given a concentrated injection of 20 cg. of galyl into one of the antecubital veins, and an intramuscular injection of 9 gr. of quinine bihydrochloride in gluteal region. The galyl injection was repeated on the third day and the intramuscular quinine injection every 12 hours until the graver symptoms subsided, the oral administration of 5 gr. three times a day being then substituted.

In the majority of my cases Sternberg's mixture was of great value, affording relief in persistent vomiting and abdominal discomfort, the alkali apparently neutralising excessive acidity, and the perchloride of mercury probably inhibiting abnormal gastric fermentation.

Vigorous *hydrotherapy*, both oral and rectal, was commenced as soon as the patient came under treatment, and a profuse perspiration induced by a hot pack applied for three hours and repeated in some instances. The hot pack, in addition to its diaphoretic action, invariably relieved the acute abdominal and lumbar pains. By the rectum, 4 oz. of warm saline were given upon admission, and repeated every four hours, the quantity being increased to 8 oz. To avoid rectal irritation militating against absorption great care should be exercised, a long, well lubricated rectal tube being carefully passed 4–6 in. beyond the anus, and the funnel raised not more than 18 in. above the patient's body; the flow should not exceed 1 oz. per minute.

In grave cases ½ oz. of brandy was added to each saline. Dextrose was not available, or I should have used it. A previous cleansing enema of soap-and-water is best avoided. The same remark applies to purgatives—e.g., calomel and jalap. The average blackwater case has frequently had some diarrhœa prior to onset of hæmoglobinuria, and even should scybala be present they will usually be removed by the first saline enema, subsequent salines being retained.

The oral administration of hot watery fluids—e.g., sweetened lime drinks, barley water, or even plain warm water—was encouraged up to the point of compulsion. In addition to the fluid given by the attendant a supply should always be placed within the patient's reach, so that he can drink it whenever he desires. Not infrequently in this manner a patient will drink a pint an hour, and maintain this rate for several hours, profuse diaphoresis and diuresis resulting.

The acidity of the hot lime drinks customarily given in the tropics is a disadvantage; warm barley water is preferable; aerated water should be avoided as much as possible. A blackwater fever patient's stomach is invariably in an irritable condition, and the gas evolved therein from the imbibition of large quantities of aerated water tends to increase the discomfort.

Persistent vomiting and hiccough were treated by Sternberg's mixture administered hourly, ice to suck, and a mustard plaster applied to the epigastrium.

Throughout the illness and for at least seven days after the cessation of the hæmoglobinuria patients were kept strictly in a recumbent or semi-recumbent position. During convalescence diet was light, nutritious, and given in small quantities at frequent intervals.

Invaliding to a temperate climate was necessary as soon as the patient was fit to travel, and he was advised to take quinine hydrochloride in 5 gr. doses thrice daily for at least a month, together with an iron and arsenic tonic.

Results.—The results of this treatment in these 10 cases were 8 recoveries and 2 deaths. Of the latter, one did not come under treatment until the third day of the disease, when the prognosis was almost hopeless, death occurring on the fifth day. The other fatal case had recently contracted syphilis; death occurred on the third day.

Conclusions.

My conclusions, formed upon these 10 cases, are as follows.

1. The previous history in each case tends to show that the blackwater fever of West Africa is a manifestation of recurrent and inefficiently treated malaria. This is further supported by the fact that immediate and repeated intramuscular injections of quinine, combined with galyl injected intravenously and vigorous hydrotherapy, are a satisfactory treatment.

2. The prophylaxis of blackwater fever is essentially that of malaria.

3. In galyl we have an important remedy, since it apparently has (*a*) a stabilising effect upon the hæmoglobin, and therefore is antihæmolytic; (*b*) an antiparasitic action; and (*c*) an accelerating effect on the formation of red blood corpuscles. In one grave case in which it was successfully used the hæmoglobin (Tallquist) was only 20 per cent. of the normal. Further, in no case of blackwater fever in which I have used it have any ill effects attributable to galyl appeared.

4. No person who has suffered from blackwater fever should return to an endemic area until after at least four months spent in a temperate climate. The return should be conditional upon an undertaking being given faithfully to observe the conditions necessary for the prophylaxis of malaria—e.g., the taking of quinine as a prophylactic according to a recognised system, and the proper use of a mosquito net. Otherwise there is a grave liability to a second attack, which would probably prove fatal. Moreover, people who hold, as the above patients did, that it is not necessary to take quinine systematically in West Africa, are, by spreading their pernicious doctrine, a danger to other Europeans.

CEREBRO-SPINAL MENINGITIS:

A CLINICAL METHOD OF DETERMINING THE TYPE OF THE INFECTING MENINGOCOCCUS.

BY A. S. GORDON BELL, M.R.C.S. ENG., L.R.C.P. LOND.,
TEMP. MAJOR, R.A.M.C., OF THE CENTRAL CEREBRO-SPINAL FEVER LABORATORY.

IF the standard method of agglutination at 55° C. be employed 72 hours generally elapse between lumbar puncture and determination of the type of infecting meningococcus. With the rapid method herein described 20–24 hours only are needed; homologous curative serum can then be given. The advantage is obvious.

Technique.

Use a pipette made from glass tubing, drawn to a *very* fine point and fitted with a teat. On a glass plate drop one drop of each of the four type sera, these must be of high titre; alongside each of these drop an equal volume of the emulsion of the coccus under examination; this should be 40,000 millions to 50,000 millions per c.cm. Mix and examine the four pools with a watchmaker's glass. Type is indicated by the pool in which agglutination *first* appears.

(*a*) After five minutes, if a negative result obtain, arrange the serum on the plate thus:—

Type I.	Type II.	Type III.	Type IV.
2 drops.	2 drops.	2 drops.	2 drops.
3 ,,	3 ,,	3 ,,	3 ,,
4 ,,	4 ,,	4 ,,	4 ,,

To each of these pools of serum add a drop of emulsion, mix and examine as before.

(*b*) If the result be not specific—i.e., agglutination appear in two pools within two minutes of each other—vary the *emulsion* thus:—

3 drops.	3 drops.	3 drops.	3 drops.
6 ,,	6 ,,	6 ,,	6 ,,
12 ,,	12 ,,	12 ,,	12 ,,

To each of these add one drop of Type I. serum in the first vertical row, one drop of Type II. in the second row, and so on. Mix and examine as before. Agglutination will no longer appear with the heterologous serum. If there is agglutination with both I. and III. and a specific reading cannot be obtained, the type may be called provisionally I., as the Type I. serum, so far as I know, is specific.

(*c*) If there is not sufficient growth to allow of a 40,000 million emulsion, take a few drops of saline, pick off colonies, and make an emulsion. Now, instead of a pipette use a platinum loop to make the several mixtures.

General rules.—1. If the coccus has been grown on blood, get rid of as much as possible of this before making the emulsion. 2. Always kill the coccus at 65° C. before testing.

3. In the end agglutination will generally appear with all four type sera, and even with the normal serum. This agglutination may be disregarded. Again, if by varying the emulsion specificity cannot be obtained, and at least one minute does not elapse between the agglutination by two sera of different types, the result should be disregarded and the patient treated with pooled serum till the type can be determined by the usual slow method. 4. Always confirm results by the slow method at 55° C.

Results of Tests.

With laboratory specimens of the different types the following results were obtained:—

Type.	No. of specimens.	Correct answers.	Negative.	Incorrect.
I.	15	13	1	1
II.	25	24	1	—
III.	12	12	—	—
IV.	7	4	3	—

As Type IV. is so relatively rare the result is of small moment. With 14 recent cases of cerebro-spinal fever a correct answer, as subsequently confirmed by the slow method, has been given in 12; 1 was negative and 1 wrong. All these results were obtained in under 24 hours after lumbar puncture.

This method is at present of no use in typing cocci obtained from post-nasal swabs, as agglutination has been known to take place with Gram-negative naso-pharyngeal cocci, which do not absorb and therefore are probably not true meningococci.

Too much weight must not be laid on the results obtained with laboratory specimens, as experience has shown that meningococci under prolonged culture on egg and trypagar media may tend to become more specialised than when recently isolated.

The general correctness of the results obtained with actual cases indicates that this method should be tried in view of the simplicity of the technique. Any medical man with sufficient skill to add blood aseptically to a slope and possessed of a 37° C. incubator can grow the meningococcus; the putting up of dilutions of varying strength and the need of a 55° C. incubator are dispensed with.

The opinions expressed in the Medical Research Committee's recent pamphlet[1] emphasise the necessity of early typing and the use of monovalent sera. "Although the aggregate of cases is not large, a considerable proportion of them were severe—some very severe—and the positive evidence which they afford of the therapeutic value of monotypical serum is, therefore, of considerable weight" (M. H. Gordon). Final deduction from the same pamphlet: "The great importance of promptly determining the type of meningococcus and of using the appropriate serum at the earliest moment" (T. G. M. Hine).

Method of Obtaining High-titre Sera.

The following is the method of manufacture of these high titre sera. A titre of 1 : 2000 is desirable to start with. It is necessary to get rid of the group agglutinins which are always present with sera of this strength. These group agglutinins are eliminated by saturating them with cocci of the heterologous types.

Technique.—100,000 million cocci of each heterologous type, killed by heating to 65° C., are added per c.cm. of the serum under treatment. Details as follows: Grow a large number of plates, wash off in a few c.cm. of saline, titre. Kill at 65° C., phenolate, centrifuge for 2 hours, decant the supernatant fluid, add the serum to the solid cocci remaining. Stir up, put in a bottle, shake well, incubate for 2 hours at 37° C., repeating the shaking three times during this period. The best results are obtained if the saturation be fractional; let the cocci be in four tubes, add the serum to one, incubate half an hour, add to the second tube, and so forth. Re-spin till the serum is clear, decant, and test against a large number of emulsions of homologous and heterologous cocci for catholicity with regard to the former and specificity with regard to the latter. If specificity is not present repeat the process of saturation.

[1] The Specific Treatment of Cerebro-spinal Fever, with an Analysis of the Reports on the First Ninety Cases Treated with Monotypical Sera.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

HÆMORRHAGIC SPINAL EFFUSIONS.

BY W. P. S. BRANSON, M.D. CAMB., F.R.C.P. LOND., COLONEL, A.M.S.

I HAVE lately seen two examples of a malady which is new to me, and I record this brief note, incomplete though it is, in order to elicit information from others who may have met the same sort of thing. The cases occurred in Belgium in January, 1919. Both patients were British private soldiers of different units, and the influenza epidemic was still severe among the troops in the neighbourhood. The patients were treated in 48th C.C.S. at Namur.

Clinical Picture.

The clinical features of the illness were so nearly identical in the two cases (with exceptions which will be noted) that one description will serve for both.

The patient fell ill suddenly with extreme frontal headache and stiffness of the neck, and vomited once or twice, but no more. He was practically afebrile throughout, though a 12-hourly chart showed fitful elevations of temperature to 100° F. or less. His face was of the peculiar sub-cyanotic tint so characteristic of the present epidemic of influenza. Mentally he was clear, and exhibited none of the lethargy and torpor one would expect to see in a victim of cerebro-spinal meningitis having the same degree of headache. The pulse-rate was normal, and no complaint was made of generalised aching. Kernig's sign was not conclusively present.

Lumbar puncture (in one instance on the second day of the disease, in the other on the fourth) produced 40–50 c.cm. of a highly bloody fluid, under considerable pressure. A test-tube full of this fluid, left standing for 24 hours, showed a clear supernatant fluid and a deposit of blood-cells in about equal proportions. Repetition of the puncture on the two succeeding days produced 30–40 c.cm. of a similar fluid, but visibly less bloody. By this time in each case amelioration of symptoms was so far advanced that nothing further was done. One patient was evacuated to the base convalescent, the other had reached the seventeenth day of his illness when I last heard of him, and bid fair to make a good recovery, though both of them were slow in getting rid of their headaches.

The examination of the spinal fluids was carried out under great difficulties (his laboratory being some 20 miles away) by Captain G. A. Wyon, R.A.M.C., of the 19th Mobile Laboratory, to whom I am indebted for the following particulars:—

(1) No organisms could be found in films (five examinations); (2) each spinal fluid was cultivated twice and all the cultures remained sterile; (3) the cytology of the fluid is uncertain. In one case no count was made, but Captain Wyon's clear impression is that polymorphonuclear leucocytes predominated and were in excess relatively to the red blood cells. In the other case a single relative count of leucocytes gave the following result: Polymorphonuclears, 96; lymphocytes, 3; and mononuclears, large, 1 per cent.

I spoke above of items not common to both patients.

(*a*) The first patient was taken ill at the conclusion of a three days' journey in a lorry, and a note from his regimental medical officer said that a number of men who had made the same journey had been seized with headache and vomiting, and themselves attributed their symptoms to gassing by petrol fumes while in the lorry. We, however, in the C.C.S. saw no more of these patients, so that it is to be presumed that the symptoms were fugitive.

(*b*) The second patient had made no such journey, but he also differed from the other in two subordinate respects: 1. He had a persistent cough with expectoration. 2. The stiffness of his neck was associated with a band of bilateral hyperæsthesia (which he plotted out spontaneously in the most certain fashion). This band was about 2 in. broad and ran downward from his cervical spine along the upper border of the trapezius to the top of the shoulder on each side.

Causation.

I do not know what this ailment was, but it pretty certainly was not cerebro-spinal meningitis, of which disease I saw a few sporadic cases at about this time. At a guess I

should say it was a variety of influenza, mainly because the complexion of its victims was that of the influenzal, and I have not observed that peculiar bluish flush in any other malady.

I saw the same flush in another anomalous patient during this period. His symptoms were high fever, lethargy, and right hemiparesis. His cerebro-spinal fluid was perfectly clear. He recovered in about three weeks, sufficiently, at least, to be sent to the base convalescent. I called his ailment "lethargic encephalitis" on the score of what I had read, and for lack of a better name, but it seems to me likely enough that it also was a variant of influenzal picture.

I shall be grateful if any reader of this can help me to more knowledge of the above-described variety of hæmatorhachis. This note is recorded by leave of the Director-General, Medical Services, British Armies in France.

A CASE OF ANAPHYLAXIS.

BY J. K. GAUNT, M.B., CH.B. BIRM.,
CAPTAIN, R.A.M.C.; —— STATIONARY HOSPITAL, B.E.F., FRANCE.

THE following case of anaphylaxis appears interesting as it occurred in a subject for the first time when inoculated with antitetanic serum for his third wound, no such phenomena having taken place when inoculated for his first two wounds a year and 21 months previously.

Private, aged 22, was wounded on April 8th, 1918, a small graze on right elbow. On the 10th the first dose of antitetanic serum was given at a base hospital at 2 P.M. About 2.30 P.M. he complained of feeling very weak and faint, of blood rushing to the head, that the eyes felt closing up, that the heart was "vibrating," and that there was a tightness across the chest. The skin then began to irritate all over. Seen shortly afterwards, the eyelids were very much swollen and he was very flushed. There was a profuse general urticaria. The pulse was not palpable; cardiac sounds inaudible. During the next two hours he vomited continuously and the bowels were freely open three times. Caffein sod. sal., gr. 2½, and brandy being administered, a general improvement soon began, and he made an uninterrupted recovery. The second dose of serum, due seven days later, was withheld.

The patient stated that when wounded on July 1st, 1916, he received two doses of antitetanic serum at about 10 days' interval—no inconvenience whatever. He was again wounded on April 10th, 1917, and had two doses of serum at about 10 days' interval, again without any inconvenience. As far as he can remember, the interval between the doses was certainly not less than 10 days in each case, possibly longer. His previous health had invariably been good, and he had never suffered from "nettle-rash" or asthma.

CASE OF DEATH FROM SCORPION STINGS.

BY ALLAN WATSON, D.S.O., M.D. EDIN., D.P.H., D.T.M. & H.,
CAPTAIN, R.A.M.C.

DEATH resulting from scorpion stings is so unusual that the following case, which presented some interesting features and ended fatally, may be worth recording.

Private C., who was serving with his battalion in a forward area in Mesopotamia, was brought to the regimental aid-post about 11 o'clock one night suffering from scorpion stings. He was a small, slightly built man, aged 21. He stated that he had just been stung three times on the buttocks and thigh by a green scorpion which measured about 3 inches from the head to tip of the tail. The scorpion had been killed and was produced.

The patient appeared somewhat nervous and complained of a tingling "pins-and-needles" sensation all over him, but otherwise his condition was quite good, and he had no pain. He was given some brandy and detained in the aid-post for the night. Shortly afterwards he fell asleep and slept for some hours.

His pulse and temperature were taken in the usual routine about 5 o'clock next morning; both were normal, and he appeared to be in good condition, but he still complained of the "pins-and-needles" sensation all over his body. About an hour later he suddenly became collapsed. He was conscious but very weak. There was a cold sweat on his forehead, his temperature was subnormal, and his

(Continued at foot of next column.)

Medical Societies.

BRITISH PSYCHOLOGICAL SOCIETY.

Inaugural Address.

THE first meeting of the Medical Section of this society was held at the Medical Society of London on May 15th, when Dr. W. H. R. RIVERS delivered the inaugural address from the chair, the subject being

Psychology and Medicine.

He said: We are met this evening to inaugurate the foundation of a special section of a society which has hitherto attempted to cover unaided the whole field of psychological inquiry. The great increase of interest in, and knowledge of, the mental aspect of disease which has been one result of the abnormal strains to which modern warfare has exposed the soldier made it certain that something would be done to foster this interest and increase this knowledge. On the more practical side, and in its relation to medicine in general, the medical profession is already provided with instruments for this purpose in the Psychiatrical Section of the Royal Society of Medicine and the Medico-Psychological Association; but the work of these bodies is chiefly connected with the practical aspect of medicine. It is not their business to attend in any special measure to the theoretical aspect of psychology. Still less is it their function to deal with the relations of their work to other branches of psychology.

As soon as the declaration of the armistice became effective, there arose a widespread opinion that some organisation was necessary to encourage the more theoretical side of psychological medicine. It became a question whether this purpose would be fulfilled more effectively by a society wholly devoted to this purpose, or whether the new organisation should become part of the society which has now for many years been the meeting place of the psychologists of this country. This question has been decided in the second sense, and on this occasion, when the Medical Section of our society meets for the first time, I cannot better employ the privilege you have given me of opening its scientific work than by pointing out some reasons which justify this decision.

The Good and the Evil of Specialism.

I will begin with a general problem. One of the most vexed questions of to-day is concerned with the good and the evil of specialism. With the great advance in knowledge of which we are now enjoying the fruit specialism is necessary. Owing to the vast extent of the field it is essential that workers, in medical as in other branches of science, shall not be content with a general knowledge of the subject to which they devote their labours, but shall attend specially to some one of the many aspects which every branch of knowledge now presents. This specialisation has, however, in recent years reached such a pitch that it has become a serious evil. There is even a tendency to regard with suspicion one who betrays the possession of knowledge or attainments outside a narrow circle of interests. Scientific workers often deliberately confine their research to some narrow channel. They fail to see the bearings of work, including their own, which would be obvious if they lifted their heads and surveyed even cursorily the broad field of knowledge of which their own specialty forms one of the fertilising streams. The linking of workers in psychological medicine with other students as members of a society which covers the whole field of psychology should go far to prevent the evil of undue narrowness of outlook and limitation of interest.

(Continued from previous column.)

pulse was slow and feeble. He was given strychnine and digitalin hypodermically and brandy and hot oxo by mouth. His condition rapidly improved and he was ordered brandy hourly and hot oxo every two hours. By mid-day he appeared to be out of danger and was taking quite an interest on what was going on around him. Treatment, however, was continued. At 4.15 P.M. he suddenly became severely collapsed and died in a few minutes.

It is proposed that the society to which we now belong shall have several sections, but owing to the fewness of their adherents students of certain subjects well adapted for special sections will for the present have to be content with the opportunities offered by general membership. I propose now to survey briefly some of these branches of psychology and inquire how we may expect to benefit from association with those who study them.

Introspective Psychology.

I will begin with the parent, an aged parent, whose services in the past we are perhaps inclined to depreciate unduly. The older introspective psychology which came into existence by a long-drawn-out process of fission from philosophy, with which it still struggles to maintain its connexion, did great service in defining the problems of psychology and analysing into its elements the vast complexity of mental process. Into this process of analysis it brought from its earlier associations a clearness and exactness of thought which may well be emulated by the adherents of the later developments of psychology. The great fault of the older psychologists was that their liking for clearness of reasoning and exactness of definition led them to pay a far too exclusive attention to the intellectual aspect of mind, where exactness is possible. It led them to ignore, or pay too little attention to, the subjects of instinct, feeling, and emotion, which are less susceptible of exact treatment. They also tended to neglect unduly mental process lying on the confines, or altogether without the confines, of the conscious. The adherents of the older academic psychology are now aware of the imperfections of their earlier position. But they have not lost the logical minds which they acquired from their special training, and there is the widest scope for mutual advantage if they will take part in our discussions and if we attempt to understand the point of view from which they regard our special problems.

The Experimental Method.

Next in order I may take the experimental movement in psychology. There is now a widespread, and in my belief well-founded, opinion that this movement has failed to come up to the expectations of its founders and has proved unfruitful as a direct means of increasing our knowledge, at any rate in so far as it confines its attention to the experimental investigation of the normal human adult. It cannot be said to have done much more than provide suggestions and clues for investigation on other lines. It is not difficult to see the reason for this. In the case of the normal human adult, there is too little scope for the variation of conditions which is the essence of experiment. It is only such subjects as are open to the definite variation of conditions that have provided material for any great advance in knowledge.

While the experimental method as applied to the normal adult has borne little fruit, it would be difficult to rate too highly the importance of experiment in discovering and testing methods to be used in other lines of psychological inquiry where a wider variation of conditions is possible. The value of these methods is now generally recognised in the investigation of the developing mind of the child and of the mental processes of animals. These methods are also essential to the new department of industrial psychology, but there is no branch in which they are more needed than in psychological medicine. Thus, the clinical work of Head and his colleagues, which must take a foremost place in the history of psychology, has as one of its main features the utilisation of the methods of experimental psychology modified to meet the special needs presented by clinical material. Experimental psychology takes a place in relation to the observation of data derived from behaviour as important as that which is taken by the older introspective psychology in relation to the logical processes by which these data are utilised.

It is not at present proposed that the two branches of psychology which I have just considered shall have special sections devoted to them. Members of this section should be able to gain such help as they require by the attendance of general and experimental psychologists at the meetings of this section, while they may also learn much from the papers and demonstrations given at general meetings of the society.

Educational Psychology.

The subject of educational psychology, for the study of which a section has already been formed, is one from which members of this section should have much to learn. It is now widely agreed that much of the general psychological state which predisposes a person to the occurrence of neurosis, and to a less extent of psychosis, comes from faults of education, using this term in a wide sense to include the whole life-history of the child from its birth. Opinions differ concerning the relative weight of these factors as compared with heredity in the production of the neurotic and psychotic constitution, but no one can use modern methods in the clinical investigation of psychoneurosis without having forced upon him the vast importance of the mental traumata and faulty trends of thought and conduct which occur or come into existence in childhood, often in its very early years. Nothing is more needed to help advance in our special field of knowledge than close collaboration between those who deal with sufferers from the psycho-neuroses and those who have the care of children during the years when the seeds of these morbid states are sown. May we hope that joint gatherings, mutual attendance at the meetings of both sections, and the general opportunities for interchange of views which this society should provide, may furnish material for rapid progress on lines which will bring great mutual benefit to both physician and teacher.

Industrial Psychology.

The other section, which has been already inaugurated, will deal with industrial psychology. Within its scope will come the investigation of fatigue, interest, practice, and other mental factors which affect the efficiency of labour, both manual and mental. It will also deal with the mental qualities which fit or unfit a person for an occupation, and thus help in the highly important task of putting round pegs in round holes and square in square. Investigations of this kind will not be limited merely to the needs of government departments or the demands of industry, but will, doubtless, be extended to such subjects as the choice of a profession, and will thus closely approach the work of the educational section. Here, perhaps, the psychologist of industry will have to learn from the physician, and members of this section will, perhaps, visit the Section of Industrial Psychology to teach rather than to learn, but it is very unlikely that the advantage will be altogether one-sided. Nothing but good can come from common membership of this society with its opportunities of collaboration.

Social Psychology.

The two sections to which I have just referred will resemble our own in that they will be devoted to applied psychology. It is not at present proposed to found a section for the branch of psychology which I have now to consider, though this cannot be long delayed. The science which deals with the behaviour of human beings when acting as members of a group, and not merely as individuals, is usually known as social psychology, though it might also be called collective psychology. It attempts to explain the actions of men as members of a social group, whether nation, tribe, clan, church, profession, club, or any other kind of combination in which men unite for social purposes. Psychology is here removed from the possibility of utilising experiment as a means of eliciting truth and has therefore had recourse to the comparative method. Social psychology is largely devoted to the behaviour of human society in its simpler and cruder forms, whether of the past or of the savage and barbarous peoples who still occupy the less comfortable regions of the earth. Through the study of the culture of these peoples it is becoming possible to form some idea of the mental factors which have determined the course of human evolution and the outcome of the interactions, peaceful or otherwise, which come into being when peoples are brought into contact with one another.

It might seem at first sight that we have here a branch of psychology which can have little in common with the work of this section. The knowledge gained in this new study, however, has already brought out some striking parallels between the behaviour of the ruder forms of human society and the thoughts and actions of civilised man under such abnormal conditions as come within the purview of this section.

Instinctive Tendencies and Social Ideals.

The outstanding fact which is daily becoming clearer to those who are studying the various forms of mental disorder is that these depend upon the re-entrance into activity of instinctive tendencies which have been brought under control in the normal healthy person, and have become subject to standards of thought and conduct in harmony with the needs of social life. In man many instinctive tendencies subserving the welfare and immediate happiness of the individual have been suppressed because they are incompatible with the needs of society, and with the ultimate happiness of the individual as a member of society. Neurosis and psychosis are essentially states in which the controlling and suppressing forces have been so weakened that conflicts are aroused in which the suppressed tendencies strive with more or less success to regain the predominance they once held, both in the history of the race and in the infancy of the individual.

The frequency of the psycho-neuroses in the great communities of the modern world is the direct consequence of the fluid and unorganised character of their civilisation. In savage communities where long ages of freedom from external influence have allowed culture to become organised and stable, the psycho-neuroses are absent or hardly to be detected, although the cruder forms of mental disorder, such as imbecility and idiocy, are not uncommon. In such communities there has come about a stable adjustment between instinctive tendencies and social ideals, leaving no room for the conflict which forms the essence of the psycho-neuroses. Similarly, I believe that a comparative study of the frequency and severity of neuroses among the great civilisations of the modern world, will show that this frequency and severity are definitely correlated with the fluidity or instability of the culture and with the extent to which national ideals call for repression of instinctive tendencies. The perfect social organisation is one in which instinctive tendencies, out of harmony with social ideals, have so come under control that they no longer form the grounds of conflict or give occasion for it only in the presence of exceptional stress and strain.

Another interest of social psychology to the student of mental medicine, is that when men act collectively they tend to be moved predominantly by motives belonging to the instinctive sphere. Not only does each individual of the mass act more instinctively as a member of a group than as an individual, but when a number of men act together, the rational motives arising out of education, and other forms of social process, tend to cancel one other, leaving in power the instinctive tendencies which are common to all and of the same nature in all. It is this potency of instinct which is common to the behaviour of men in mass and the individual in disease which gives a common interest to the physician and the social psychologist. It furnishes a reason in itself sufficient to justify the inclusion of both in one organisation for the advancement of knowledge.

Primitive Mental Processes.

Of even more interest to the physician should be the study of mental process in rude and backward forms of human society. Much as we may disagree in detail, there is general agreement that in neurosis and psychosis there is in action a process of regression to primitive and infantile states. Anything which helps the physician to a knowledge of the primitive and infantile in man should therefore come within his circle of interests. In so far as the thought and behaviour of savage man are primitive, they furnish material which helps us to understand and deal with the regressive states exhibited by sufferers from disorder of mental functions.

From the point of view of the ethnologist the problem is far from simple. The customs and institutions of existing examples of savage man show such a bewildering mixture of development and degeneration that it is difficult to disentangle the primitive from the late. If it stood alone ethnology would be greatly embarrassed by the complexity of its problems, and it is driven to seek help in the study of other aspects of human behaviour. If regression is a constant feature of morbid mental states, and of such a normal process as the dream, it should furnish much material to help the seeker after the primitive in human conduct. In a recent publication [1] I have tried to show how the psychology of the dream may help us to determine the nature of the primitive, and quite as much is to be learnt from the psychology of neurosis, which, as we are coming to see, has so much in common with the dream. Medicine standing alone and ethnology standing alone may find themselves helpless before problems the solution of which will come from the union of the two lines of inquiry, at first sight so widely different from one another. It is difficult at present to say exactly how each can help the other, but the general trend of our knowledge justifies the brightest hopes if students of each will work together in such a spirit of coöperation as it is the object of this society to foster.

[1] W. H. R. Rivers: Dreams and Primitive Culture. Manchester. 1918.

Animal Psychology.

Another branch of psychology is one which might at first sight seem even more remote from the interests of the physician than that I have just considered. The study of the mental processes of animals is one in which this country has had, and still has, great names, but the number of its votaries is at present so small that there does not seem to be any immediate prospect of the foundation of a special section devoted to this study. Work on this subject will for the present form part of the business of the general society, but however it enter into the scheme of our activities, animal psychology should have a profound interest for the physician, and for reasons similar to those which justify his interest in the ruder forms of human culture. If instinct have the importance which we are, I think, all willing to recognise, animal psychology, from which issues our chief knowledge of instinct, cannot be neglected by this section. At the present time there is much confusion and uncertainty in the use of instinct as a psychological concept. In clearing up this confusion we need the coöperation of those whose studies lead them to an interest in the primitive, whether it be exhibited by the animal, the child, the savage, or the subject of regression. We do not know from which of these will come the clue leading us to the truth, but my impression is that morbid psychology has the brightest prospects, and that this subject is destined to illuminate many of the dark regions in our knowledge of mental development. Here, again, the opportunities of collaboration offered by this society should furnish an ample reason for our union with other branches of psychology.

Special Tasks of the Section.

Thus far I have been considering the work of this section in its relation to the general aims of the British Psychological Society and to the work of its other sections. It is now fitting that I should say something about the special tasks which lie before our own section. The most obvious task is to understand the functional nervous and mental disorders, and to make them instruments by which we may be helped to understand the normal working of the mind. Most of us are engaged, or have been engaged during the war, in the practical task of treating sufferers from disorders which, notwithstanding the apparently physical character of many of their manifestations, are now generally recognised as being wholly or in the main of mental origin. It is our special task as members of this section to study these disorders in order that we may carry out that process of bringing them into relation with other fields of knowledge which we call "explanation."

Many of us have been brought into contact with the psycho-neuroses only through the accidents of war, and a word or two may therefore be said about the special interest of war neurosis from the psychological point of view. In my opinion, the keynote of the war neuroses is their simplicity. They are primarily due to the reawakening of suppressed instinctive tendencies which, in most members of our civilisation, are normally allowed to lie dormant because the mechanisms by which they are controlled and suppressed are subjected to no strain great or continuous enough to interfere with their efficiency. Moreover, the instinct which is mainly affected, the instinct of self-preservation, is one of great simplicity, while the social and intellectual elements which form factors in the process of control are also of a relatively simple kind. Through this simplicity the psycho-neuroses of war are well adapted to illustrate the essential characters not only of the pathological states, but also of the normal balance between controlled and controlling forces which underlies the harmony of the healthy mental life.

The Psycho-neuroses of Civil Life.

Now that the war is over it becomes our task to utilise the knowledge we have gained from the study of a relatively simple and transparent form of disorder. We have to discover with equal clearness the nature of the psycho-neuroses which in times of peace take so large a place in the life and work of a physician. Just as the war neuroses are essentially the result of conflict between certain instinctive tendencies and the traditional sentiments and ideals of society concerning these tendencies, so can we be confident that a similar conflict will be found to form the essential factor in the psycho-neuroses of civil life. It will be our task to discover the nature of the instinctive tendencies and of the social ideals which form the opposing forces in this intestine warfare within the individual life. You all know how the most prominent school of students of the psycho-neuroses believe that the instinctive tendencies which stand on one side of the battleground belong exclusively to the instinct of sex. However repellent this may be to the traditions of the medical profession, we must be prepared to face this problem honestly and without prejudice. In turning from the practice of war to that of peace we must expect to find a great increase in the part taken by the sexual instinct, for the simple and obvious reason that the conditions of our civilisation make this instinct the special object of its repressions and taboos. We have found reason to believe that sex plays but a little part in the causation of war-neuroses, but it does not follow that this will hold good of the neuroses of civil life. On the other hand, we must be careful to hold the balance and not allow ourselves to give to sexual tendencies a prominence greater than they deserve. The sexual instinct is far from standing alone as the subject of the repressions and taboos of social tradition. It should be our working hypothesis that any instinct which needs repression in the interests of society may furnish that occasion for conflict which forms the essence of neurosis.

The psycho-neuroses form so absorbing a topic, and provide so vast a field for observation and speculation, that we may easily overlook another line of inquiry which should be of equal interest to our section. There is an especial danger that we may overlook this second line of interest in that most of us have been engaged during the war exclusively in the study of those disorders of nervous and mental activity which we label "functional." Many may perhaps be hardly aware of the advance in psychological knowledge which has come from observations on the organic lesions furnished by the accidents of war.

Clinical Investigation of the Nervous System.

The destruction of parts of the nervous system by injury or disease takes in the psycho-physiology of man the place which in the case of the lower animals belongs to experiment. We have to look to the investigation of organic lesions for light upon all those higher functions of the nervous system which give to man his distinctive place in the universe. Clinical investigation forms the chief instrument, sometimes the only instrument, which we can use in the investigation of speech or other of those higher reactions which are associated with mental activity.

The clinical investigation of the nervous system has in recent years thrown a flood of light upon all the sensori-motor processes which form the basis of mind. Pre-eminent in this respect have been the researches of Head. Working steadily through the nervous system from periphery to centre, he has now reached the cortex cerebri. In his recent paper on "Sensation and the Cerebral Cortex"[2] he has given us a clear and consistent account of the mechanisms by which the cortex exerts that selective and discriminative activity which we call "attention." It is only through such work that psychology can expect to gain any profit from the study of the anatomy and chemistry of the brain, whether normal or pathological. The neuron and the arrangements of neurons can have none but a purely speculative interest for the psychologist until the analysis of mental function has carried our knowledge far beyond the limits of the territory it has now conquered. It is only when such analysis as that carried out by Head in the case of cutaneous sensibility has been extended to other forms of sensation and to such manifestations of cortical activity as speech that we can expect to understand the nature of the relations between nervous and mental activity.

The experience of war has recently taken Head, working in conjunction with Riddoch,[3] back to the spinal cord. It might be thought that there would be little here to interest us as psychologists, but the investigations of these workers have brought out many features of the functions of the spinal cord, when separated from the rest of the nervous system, which make a great addition to our knowledge. They contribute greatly to the solution of the problem, so vitally important to the psychologist, of the evolution of the reactions by which animals have adjusted themselves to the progressive increase in the complexity of their environment.

Especially instructive from this point of view is the discovery of the "mass-reflex." This is a mode of reaction of the isolated spinal cord, one of the most primitive kind, such as would ensure the bodily withdrawal of an animal from noxious stimulation. This reflex is so out of keeping with later modes of reaction that it has been wholly suppressed and buried, and its presence has only been revealed by one of the cruellest accidents of war.

Physiology of the Nervous System.

Such clinical investigations as those of Head and his colleagues bring us to the physiology of the nervous system. Here again we have a subject which should take a prominent place in the deliberations of this section. Especially through the work of Sherrington[4] we have been provided with a large body of knowledge which, though gained by purely physiological methods and purely physiological in character, should nevertheless be of great interest to the psychologist, for it reveals a general plan of neural function with which any plan of mental function must be in harmony. In work on the activities arising out of the complex relations of binocular vision Sherrington[5] has shown that his integrative mechanisms apply to a psychical process of a relatively high order. This should point the way to other work designed to bring out the relations between physiological and psychological integration.

Another product of the recent physiology of the nervous system which I should like to mention is the "all-or-none" principle, the demonstration of which we owe to Adrian and Keith Lucas.[6] This principle, originally shown by these workers to characterise the activity of the isolated nerve fibre, holds good in large measure of the protopathic form of cutaneous sensibility and of the recently discovered "mass-reflex." Moreover, there is reason to believe that the "all-or-none" principle applies to a large extent to emotional activity and to all those instinctive reactions which are emotional in nature. All these reactions have the character that, if they take place at all, they tend to appear in their full strength without that delicate discrimination of appreciation and graduation of response which are shown by reactions associated with intelligence.

The Field of Physiological Psychology.

The lines of inquiry from which these instances have been taken furnish so vast, and in some respects so highly specialised, a field that it might be thought they should form the work of a special section of this society, a section of physiological psychology. I hope, however, that this step will not be taken, for I believe that it would be carrying the principle of specialisation to a harmful length. Rather would I advocate that this line of inquiry should be divided between this section and that of experimental psychology, whenever such a section is founded. I should like to see the physiology of the nervous system serving as a bond between the work of our section and other branches of psychology. It has been a special feature of the experimental psychology of this country that, at any rate in its early days, it was clearly linked with physiology. I hope that this close relation will continue to form a bond linking our work with that of other sections of the society, so that they shall form an harmonious organisation working with a common purpose, and with common principles, towards the better understanding of that which makes man what he is, which makes human society what it is—the mind.

[2] Brain, 1918, vol. xli., p. 57.

[3] Brain, 1918, vol. xl., pp. 188 and 264.

[4] The Integrative Action of the Nervous System, London, 1906.

[5] Brit. Journ. Psych., 1904–05, vol. i., p. 26.

[6] Brain, 1918, vol. xli., p. 26.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OTOLOGY.

Exhibition of Cases and Specimens.

A MEETING of this section was held on May 16th, Mr. HUGH E. JONES, the President, being in the chair.

Chronic Adhesive Otitis.

Dr. P. WATSON-WILLIAMS exhibited again, after an 18 months' interval, a patient, aged 26, who in May, 1916, had dry thickened membrane and dry adhesive catarrhal otitis. He found the left sphenoidal sinus infected. This he opened and enucleated the tonsils. As the Gellé test was positive he concluded that the stapedio-vestibular joint was not ankylosed. Four months later he performed crucial myringotomy, and a month after this the left membrane was more freely excised and the lower half of the handle of the malleus removed for the purpose of rendering the perforation permanent. The hearing was much better. When she was shown at the meeting of the section a month later there was some middle-ear suppuration, and some members suggested that the improved hearing was partly due to the suppuration and therefore was not likely to continue. It had remained, however, and Dr. Watson-Williams contended that the temporary middle-ear suppuration was due to infection by the Eustachian tube from the infected sphenoidal sinus.

Dr. J. DUNDAS GRANT said these operations fell into disrepute because they were often practised on cases in which the condition was really sclerosis of the middle ear. Gellé's test should always be tried before deciding to perform this operation. In cases in which discharge continued after a radical mastoid operation it was often because of disease in the naso-pharynx, not because disease persisted in the petrous cells.

Mr. H. CLAYTON FOX referred to a case of his own in which the patient had complete bilateral deafness, and after removing a piece from each membrane there was at once complete hearing.

Mr. HUNTER TOD summarised his experience in 50 cases of ossiculectomy for suppuration.

Dr. WATSON-WILLIAMS replied that he did not remove the incus or the malleus, but only the long process of the latter.

Labyrinthitis.

Mr. J. F. O'MALLEY showed and described a case of circumscribed labyrinthitis. The man, aged 35, had been partially deaf ever since his fourth year. His right ear had been discharging all his life and the left for nine years. He was admitted to hospital in August last on account of severe vertigo. On the second day after admission vomiting set in, and for 48 hours all nourishment was rejected. Temperature was normal, and on this account and as he had improved steadily, operation had not been done, especially as there was recent inflammatory activity in the posterior labyrinth. He brought the case in order to elicit opinions as to the patient's future.

Several members agreed that the ordinary radical mastoid operation would render the man's future safe; and Mr. O'MALLEY replied that this had been his intention.

Mr. O'MALLEY also showed a young unmarried woman, aged 27, on whom, in consequence of severe giddiness and inability to perform her work, he performed the radical mastoid operation, followed by labyrinthectomy as the condition did not improve after the first of these procedures. Some weeks later, after a change of air, she was well enough to return to her business.

The case was discussed by several members.

Mr. J. S. FRASER (Edinburgh) demonstrated by means of the epidiascope a remarkable series of specimens from a case of Fracture of the Labyrinth, which was followed by meningitis; also illustrative slides from three cases of Oto-sclerosis. In connexion with oto-sclerosis he also discussed the related subject of the association of blue sclerotics and fragilitas ossium as hereditary conditions.

The discussion was continued by Dr. ALBERT GRAY (Glasgow) and Mr. SYDNEY SCOTT.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM:

ANNUAL CONGRESS.

THE society held its Annual Congress in London on May 1st, 2nd, and 3rd, under the presidency of Mr. J. B. STORY (Dublin).

The President's Address.

The PRESIDENT expressed his high appreciation of the honour conferred upon him by his colleagues in electing him to fill the chair of the Congress. The society, he said, was much indebted to its past presidents, and to none more than Mr. Treacher Collins, who steered the barque of their fortunes through the stormy weather of the last years of war. At the last congress the discussion on plastic surgery of the eyelids excited very great interest, and the exhibition of cases, photographs, and casts made a deep impression on those privileged to attend the meeting, or who visited the Plastic Hospital at Sidcup. The same subject had been chosen by the Bowman lecturer this year, Professor Morax. He expressed satisfaction that the Oxford Ophthalmological Congress and the Midland Ophthalmological Society had become affiliated with the larger body. He was happy to state that three other societies had now been affiliated: the North of England, the Egyptian, and the Irish. He concluded by a reference to the special subjects for discussion at the present Congress.

On the initiative of Sir ANDERSON CRITCHETT, the President was cordially thanked for his address.

Mr. E. TREACHER COLLINS read a paper on

Abiotrophy of the Retinal Neuro-epithelium or "Retinitis Pigmentosa."

He pointed out that the pathological examination of several eyes with retinitis pigmentosa had shown that the affection might occur without sclerosis of the choroidal blood-vessels, and that the primary change appeared to be a degeneration of the rods and cones. As the condition is hereditary he suggested that the degeneration might most aptly be described as an abiotrophy. Night-blindness, the earliest symptom, is due to the failure of vision commencing in the part of the retina which, in the dark-adapted eye, is the most sensitive to light—that is, 10° to 20° from the fovea. Atypical cases of retinitis pigmentosa occur in which the macula alone is involved. There being no blood-vessels at the macula, there are, in these cases, no branching pigment patches, only scattered dots and granules of pigment. The deafness and affections of the nervous system met with in association with retinitis pigmentosa are also due to abiotrophy.

Professor J. HERBERT PARSONS remarked on the danger of labelling a diseased condition with a particular term and considering that this term explained the condition. It would be well to try to ascertain the causation.

Sir ANDERSON CRITCHETT spoke of the way subjects of retinitis pigmentosa were helped by wearing yellow glasses. He asked whether members had had experience of Crookes's glasses (which take out the violet rays) for this condition.

The subject was also discussed by Mr. R. GREEVES and Mr. M. S. MAYOU.

Mr. GEORGE YOUNG read a paper on

Results of Double Sclerectomy Operation for Glaucoma.

The incision, he said, must be as near the limbus as possible, and he emphasised the necessity of making a second opening.

Lieutenant-Colonel H. HERBERT contributed a paper on

The Future Glaucoma Operation.

He said that in India cases of glaucoma were always far advanced when seen, and he had been driven back to the iris prolapse operation. The incision was made by puncture and counter-puncture, with a 1 mm. Graefe knife and was entirely subconjunctival.

Mr. R. R. CRUISE read a paper on

Contracted Sockets,

in which he described a procedure to enable a socket which had been disorganised by injury to hold a glass eye.

Mr. C. HIGGENS showed a number of soldiers on whom he had performed various operations for the same purpose, and demonstrated the procedure followed in each case.

Mr. W. W. SINCLAIR discussed eye complications in cerebro-spinal fever, and

Dr. PERCIVAL J. HAY read a paper describing some new test-types.

Discussion on Visual Requirements of Aviators.

On Thursday afternoon members assembled at the Psychological Laboratory, University College, where a discussion was held on the subject of Visual Requirements of Aviators.

Professor SPEARMAN delivered an address on Stereoscopic Vision, which had been decided by many people, including American, to be the most important factor in the visual fitness of aviators, especially in regard to successful landings, a source of much mortality among fliers. He divided his remarks into: (1) a method of testing stereoscopic vision in candidates; (2) suggestions as to means of improving the vision of aviators. This faculty had to be differentiated from quasi-stereopsis, or the power of appreciating depth, and which depended on the clues at the disposal of either eye alone. It was important to try to find out how the ocular movements tested the balance of muscles. The eyes took up the right position for clear seeing if given plenty of time, but it did not necessarily follow they would do so when speed was essential. A test embracing the following of a moving field was therefore necessary. He showed an apparatus designed to supply this need.

Mr. A. R. BRAILEY tabulated his results in the ocular examination of about 4000 candidates for the Air Service. The lowest vision permitted was 6/18 with the better eye, 6/24 with the worse, corrected by glasses to 6/6 and 6/9 respectively. Binocular vision and a good sense of perspective were not always found to go together. Flying failures were not found to be more numerous among the wearers of glasses than among others. Perception of the parallactic movement of objects he regarded as the all-important factor, but this he had found it difficult to assess by any test. For this Service a more important matter than acuity of vision in itself were the precision and rapidity of coördination between eye and brain; it was useless for a man to see perfectly unless he could accurately interpret, and act quickly in accordance with his perception.

Major E. C. CLEMENTS had much of interest to say as to the way in which the aviator knew whether he was flying level, and demonstrated the importance of good peripheral perception. The good flier looked at his horizon and used the nose of the machine as a protractor for measuring the flying angle.

Mr. ERNEST CLARKE spoke of the importance of testing under homatropine in every case in order to exclude latent hypermetropia. Nearly all the men he had examined because they had crashed had hypermetropic astigmatism, but they had been passed as what was termed "practically normal."

Colonel M. W. FLACK emphasised the point that a man with good arm and leg movement and coördination might fly successfully even though he might not have perfect vision.

The Bowman Lecture: Plastic Operations on the Orbital Region.

Professor MORAX delivered the Bowman lecture, taking as his subject "Plastic Operations on the Orbital Region, including Reflection of the Orbital Cavity, Eyebrows, and Eyelids." The speaker opened with a felicitous acknowledgement in the name of France of the high honour conferred on him, and, through him, on French ophthalmology, by asking him to deliver this lecture. He said the prime motive for wishing to restore the appearance of the face when functional disability was not present was to get rid of the unsettling curiosity manifested by the people met in the street, with which must be coupled the fear that his obvious defect would cause a lessening of affection on the part of those he held in esteem. There should be avoidance of the use of tissues in the formation of a flap in the regions of motor nerves, and the utmost degree of asepsis must be insisted on. He found the skin surface was rendered sufficiently aseptic by sterilised soap and tincture of iodine; any organisms remaining were generally saprophytic. Hairy flaps sometimes harboured saprophytic organisms, and these might afterwards cause little foci of suppurating folliculitis. It was necessary to devise a method of securing more perfect sterilisation of hairy flaps. When the conjunctival mucous membrane was alone at stake one usually succeeded with physiological salt solutions, with instillations of zinc sulphate or silver nitrate. It was easier for the lacrymal mucous membrane to be a source of infection. Some failures in this region had been due to operations having been done when there was latent dacryocystitis, and in such cases the extirpation of the lacrymal sac and its diverticula would alone be efficacious. With regard to the destruction of eyebrows by burning or the explosion of powder, when only one brow has been involved it was easy to detach half the breadth of the other, leaving a nasal pedicle, then fixing the isolated flap in an incision made symmetrically on a level with the upper margin of the orbit. When both eyebrows were destroyed there must be recourse to non-pedicled hairy flaps, and these were less certain in results. He used for these cases flaps from the occipital region, fixing them in position by several mattress sutures. One disadvantage was that the hair on the new flap grew rapidly, and one of his cases had to have his eyebrow cut when he went to the barber. With regard to repairs to the eyelids, an extensive cutaneous destruction on a level with the lids was followed by an obvious modification of the palpebral fissure, and the mutilation would be even greater when it involved skin and subjacent tissues, muscle, &c. The first act in such cases must be to bring together the margins of the two lids after having freshened the mucous margins in the usual way. In most cases the union of the lids must be maintained for two or three months. Professor Morax entered into the technique in detail. With regard to complete symblepharon, if all the mucous membrane was destroyed the method described would have to be modified. He had found it best to expose the parts to be grafted and keep them open until the graft was in good condition. In some cases it might be necessary to combine the dermo-epidermic grafting method with the pedicled flap operation in total symblepharon. Professor Morax concluded by describing his methods of securing a mobile support for an artificial eye.

Eyesight and Education.

On Friday morning, at the Royal Society of Medicine, an interesting discussion took place on the subject of "Eyesight in Connexion with Education." It was opened by Dr. JAMES KERR, who said that at the present time any examination of the relations between vision and education rested much on the testing for acuity at school, while such matters as fatigue, functional troubles, the ocular results of various kinds of work, and the risks of visual deterioration were scarcely noted by those having the oversight of education. The results in eye-testing were largely influenced by the condition of the general cerebral cortex. Fatigue was important in academic work, and ocular fatigue, though masked by great accommodative range in the young, was a contributor to nerve fatigue. About puberty there was a real increase in the myopia present, also during the convalescence following acute illness. Sweden, by adopting classical education and Gothic print, had greatly increased the proportion of good vision in the country. There should be careful measures to avoid glare and strong light contrasts, and children should be spared all unnecessary fatigue.

Mr. N. BISHOP HARMAN dealt with the clinical aspect of the subject, and he left out of account children who had attained to some stability of tissue and whose vision was good according to accepted standards. The remainder of the school population included (1) the immature, (2) the defective, (3) the blind. With regard to Class (1) the instability of accommodation and of binocular vision in early years was notorious, and this instability must extend to other functions. Owing to the intimate relation of brain and eye the effect of any form of close work on the child was serious; he believed the eyes felt fatigued according to the degree of mental exertion. When one read of the average work required of the average infant one was led to inquire what was the average infant, but there was as yet no answer. No steps were taken to ascertain what the eyes of any particular infant were like, nor whether its defects would render the child incapable of bearing up against the strain put upon them. Between the fourth and seventh years the infant went through a training at school without any medical eyesight examination. The refraction could always be measured. He had examined the refraction of all the infants in a high-grade school in the West of London. The summary of his conclusions was that one in every three was not fit to do ordinary school work under ordinary condi-

tions, results which were striking and unexpected. He strongly condemned the practice of submitting young infants to school work without a preliminary examination of their eyes.

The subject was discussed by Dr. T. HARRISON BUTLER, Mr. CLARKE, Dr. HAY, Dr. A. L. WHITEHEAD, Mr. INGLIS POLLOCK, Dr. J. J. EVANS, Mr. G. W. THOMPSON, and the openers replied.

On Friday evening a series of papers were read and discussed.

Mr. TREACHER COLLINS and Mr. LESLIE PATON contributed a paper on Angioma of the Choroid.

Mr. CLARKE read a paper on Presbyopia, a subject which, in the author's opinion, had been very inefficiently described in the past in the various text-books. He considered that true presbyopia was entirely dependent on the lens, not due to any weakness of ciliary muscle, except in advanced age.

Colonel W. T. LISTER and Captain M. L. HINE contributed a paper on the Condition of Evulsion of the Optic Nerve. The paper gave a minute description of the changes found, and was supplemented by a number of coloured pictures, shown by means of the epidiascope.

Mr. E. E. HENDERSON read brief notes of a rare form of Bilateral Choroido-retinitis in a young child.

The following papers were read by Mr. ARNOLD LAWSON: (1) A New Method of Applying Radium in Diseases of the Eye (in collaboration with Dr. Sidney Russ, who described the rationale); (2) Flavine in Ophthalmic Surgery.

Saturday morning was devoted to a clinical meeting at the Central London Ophthalmic Hospital, when many cases of interest were exhibited and discussed.

During the Congress members visited the Day School for the Blind, Brecknock-road, Camden Town, the Myopia School, Exmouth-street, N.W., and the Wellcome Museum, Wigmore-street. During the sittings an Ophthalmological Museum was open under the charge of Mr. W. James.

TUBERCULOSIS SOCIETY.

A MEETING was held at the Royal Society of Medicine on April 28th, when Dr. HALLIDAY SUTHERLAND, the President, opened a discussion on

Tuberculosis Officers and Panel Practitioners.

He said that it was of the utmost importance that very friendly and sound relationship should exist between the general practitioner and the tuberculosis officer, as upon this depended the successful working of the scheme, and that without the goodwill and confidence of the practitioner the work of the tuberculosis officer was rendered valueless. This had, in the early days, been extremely difficult to establish, because the practitioner was suspicious that inroads were being made into his domains and work taken out of his hands. Gradually this feeling was being removed and he was beginning to feel that the help afforded by a specialist was of great value to him. It was essential that tuberculosis officers should be men with wide knowledge and experience of tuberculosis to command this confidence, and he deprecated the practice of appointment by local authorities of men with little or no experience at a low rate of salary. Such practice had hindered and prevented the progress which otherwise would have been made. It was not intended that the tuberculosis officer should relieve the practitioner of the responsibility of treating his tuberculous patients, but should be available to give advice and assistance in treatment at home, in provision of sanatorium and hospital treatment, and education and supervision of patients in their homes by health visitors and nurses. He considered the floating 6*d*. was quite an absurd remuneration for the necessary extra work required in domiciliary treatment, which was a most important part of the scheme. He thought it was essential that the tuberculosis officer and practitioner should meet and that individual visits were much more helpful than mass meetings. Demands had been made by practitioners in some districts that no cases should be seen at the dispensary unless they brought a note of introduction from their doctor. This, he thought, was wrong, as it prevented early diagnosis and treatment in a curable stage of the disease. The dispensary should be open to anyone for an opinion upon their condition if they suspected chest disease. There were still practitioners who did not make early diagnosis, and if patients waited until they made the diagnosis the curable stage passed by.

Discussion.

Dr. J. SORLEY (Walthamstow) said that in his district there was a society of practitioners, and at their meetings it was possible to discuss any questions that might arise in regard to tuberculosis, and he had found them a great help in avoiding misunderstanding.

Dr. H. A. ELLIS (Middlesbrough) said that the position of the patient should be considered before anything else and control the actions of the tuberculosis officer.

Dr. H. DE CARLE WOODCOCK (Leeds) suggested that the panel practitioner should be on the staff of the dispensary, as he considered that the practitioner was the chief tuberculosis officer, coming, as he did, into contact with the case first, and upon him resting much of the responsibility of an early diagnosis.

Dr. F. R. WALTERS (Surrey) described the difficulties in county areas, and considered that the county tuberculosis officer was very dependent upon the help of the practitioner, as, owing to the distances to be traversed, it was extremely difficult to keep in touch with the patients.

SOCIÉTÉ DE THÉRAPEUTIQUE, PARIS.—At a meeting of the society held on March 12th Dr. R. Huerre read a note on the Chemical Composition of Lemon Juice which Leven had shown to be of remarkable value in the treatment of glossitis and stomatitis (*vide* THE LANCET, May 3rd, p. 760). Examination showed that lemon juice was essentially a solution of 7–7·50 g. citric acid, 0·40–0·60 g. malic acid, 0·40–0·50 g. saccharose, 1·80–2 g. invert sugar, and 1 g. each of potassium citrate and calcium citrate, with traces of iron and phosphorus in 100 c.cm. of water.—In a paper on the Action of Hypochlorites on Pleural False Membranes Dr. Caussade, Dr. Thonier, and Dr. Philbert state that the Carrel-Dakin solution can be used with advantage after pleurotomy for empyema, in which the pleural false membranes are thick and abundant. The success of the treatment is due to the fluid breaking up and liquefying the membranes which are then expelled by irrigation of the pleura, while the healthy tissues are left intact.—Dr. P. Merklen, in a communication on Fixation Abscesses in Influenza, urges that this method of treatment should be reserved for severe cases. It should be carried out at a sufficiently early stage while the organism is still capable of reaction, and it is useless to have recourse to it in the very toxic and rapidly fatal forms; the objections to the method are the local pain and the necessity of incision and subsequent dressing. If the patient cannot be kept under close observation, a fixation abscess is inadvisable owing to the danger of secondary infection; the injection should be made into the cellular tissue and not into the muscle, so as to avoid extensive sloughing. In Merklen's opinion fixation abscesses appear to be one of the best means of protecting the system against influenzal infection, and still more so against influenza complicated by broncho-pneumonia.

NATIONAL CONFERENCE ON INFANT WELFARE.—Under the ægis of the National Association for the Prevention of Infant Mortality and for the Welfare of Infancy a National Conference on Infant Welfare will be held as part of the Baby Week celebrations at the Kingsway Hall, Kingsway, London, W.C., on July 1st, 2nd, and 3rd, from 2.30 to 4.30 each day. Under the presidency of Dr. Christopher Addison, M.P., President of the Local Government Board, the following subjects will be discussed: Antenatal and neonatal mortality; the prevention of, and the work of the midwife in, antenatal and neonatal mortality; the industrial employment of mothers in relation to infant mortality; and the illegitimate child. Among the chairmen of the sections will be Sir Arthur Newsholme, Sir Malcolm Morris, Sir Francis Champneys, Mrs. Scharlieb, and Sir John Kirk, while the readers of papers will include Dr. A. Routh, Dr. E. Holland, Professor J. M. Beattie, Dr. Saleeby, Dr. J. J. Buchan, Dr. J. S. Fairbairn, Dr. Vera Foley, Dr. Rhoda Adamson, Dr. W. F. J. Whitley, the Bishop of Kensington, and Mrs. Gotto. The attendance fee, which includes a copy of the Proceedings, is 1 guinea. Further particulars may be obtained from the secretary, 4 and 5, Tavistock-square, London, W.C. 1.

Dr. Graham Little has accepted an invitation to open the forthcoming meeting of the American Dermatological Association, to be held in Atlantic City in June. The subject of the introductory paper and of the subsequent debate is Lichen Planus.

Reviews and Notices of Books.

Sir William Turner, K.C.B., F.R.S., A Chapter in Medical History. By A. LOGAN TURNER, M.D. Edin. London and Edinburgh: William Blackwood and Sons. 1919. Pp. 514. 18*s*.

THIS book is not a biography in the sense in which, for instance, the Agricola of Tacitus or the Life of Macaulay by Trevelyan are biographies. It contains some biographical details, but the main scope of the book is to give, in the words of the author's preface, "an account of the progress of medical and scientific education as exemplified in the history of the University of Edinburgh during a period of 62 years." Turner died at the age of 84, and 62 of these 84 years were passed at Edinburgh in connexion with the University. He began his Edinburgh career as demonstrator of anatomy to Professor John Goodsir, a post which he held from 1854 to 1867. From 1867 to 1903 he was professor of anatomy, being also a member of the Senatus Academicus, while from 1903 until his death he filled the post of Principal and Vice-Chancellor, a noble record, indeed, for one who came of comparatively humble parentage and who had no interest in high places to help him. He possessed, however, valuable endowments toward success in, firstly, a mother who gave her sons of her best as regards training, a training which depended upon her from her children's early years, William Turner being only 5 years old when his father died; and secondly, intellectual capacity with a thorough realisation of the necessity for work. In a letter to his brother, which he wrote while studying at St. Bartholomew's in 1850, he says: "The more I see at the hospital the more I realise how much I have to learn; the knowledge required of us is very great, and if you have a conscientious desire to profit by the instruction you receive, you must really work very hard." Such was the rule of life which Turner followed all his days.

Turner was born in Lancaster in 1832, his father being a cabinet-maker. His early education was at a dame's school, known as Teddy Howard's, and at a small private school kept by the Rev. William Shepherd at Longmarton, in Westmorland. At the age of 15 he left school and was articled to his uncle, John Aldren, a chemist in Lancaster, but within a few weeks Dr. James Johnson, a member of a well-known Lancaster medical family, recognising the boy's ability, persuaded his mother to arrange for Turner being educated as a medical man. Funds being provided by his mother and his aunts, Turner was apprenticed to Dr. Christopher Johnson, junior. With Johnson he remained for three and a half years, when it was decided that he should go to one of the metropolitan medical schools, and in 1850 he began his career as a student of St. Bartholomew's Hospital. Here he remained four years, the teacher who influenced him most being Paget, while among his contemporaries as students were Thomas Smith, Jonathan Hutchinson, Daniel Hack Tuke, and George Rolleston. In 1852 he matriculated at the University of London, and in 1853 was admitted a Member of the Royal College of Surgeons of England. Dr. Logan Turner points out that apart from his intercourse with his fellow students at the hospital Turner's life in London was somewhat lonely, and that he employed his spare time in wandering about London and acquiring an extensive knowledge of that great city. We note a slip in his biographer's account where it is said (p. 35) "during one of his many peregrinations in London he was a witness of the last of the public executions conducted outside Newgate Prison." The last public execution outside Newgate was that of Michael Barret, the Fenian, who expiated his crime, that of causing an explosion at Clerkenwell Prison, in 1868, 14 years after Turner had left London.

In 1854 came the great crisis of Turner's career: John Goodsir, professor of anatomy in the University of Edinburgh, was in failing health, and it became necessary for him to obtain the assistance of a staff of demonstrators to enable him to carry on his duties. In this dilemma he applied to Paget, who recommended two young St. Bartholomew's men, William Newman and William Turner. The former declined the post and Turner was selected after a personal interview with Goodsir at Anderton's Hotel. He arrived in Edinburgh in October, 1854, a young man of 22 years of age, knowing no one in the city of his adoption except his chief. From that date until the end of his days Turner's whole life was spent in the service of the University of Edinburgh and in the cause of medical education both at the University and in the wider field of the General Medical Council, which body he entered in 1873 as the representative of the Universities of Aberdeen and Edinburgh. Turner's long and unselfish labours in the cause of medical education are well set forth in Dr. Logan Turner's book.

In 1916 Turner died, full of years and honours, an example of a man who walked uprightly and who never failed to carry out the maxim of "Whatsoever thy hand findeth to do, do it with thy might."

Diseases of the Ear in School Children: An Essay on the Prevention of Deafness. By JAMES KERR LOVE, M.D., F.R.F.P.S.Glasg., Lecturer on Diseases of the Ear, University of Glasgow, &c. Bristol: John Wright and Sons, Ltd. 1919. Pp. 517. 5*s*. 6*d*.

IN this record of three years' work on the treatment of ear disease undertaken for the Glasgow School Board the author lays much stress on the importance of the school clinic, hospital treatment tending to be ineffective owing to the inability of the child to attend sufficiently regularly or often, while the loss of the mother's time often leads to premature suspension of treatment. In Glasgow four clinics have been equipped by the Board on the lines of a hospital out-patient department. From an inquiry conducted during the second year of work into the rôle of infectious disease in causing middle-ear suppuration the author considers it established that children discharged from fever hospitals with suppurating ears act as carriers of disease, and he advocates the treatment of otitis to a finish before the infected child is discharged from hospital.

Dr. Love does not regard the mere finding of enlarged tonsils as an indication for operation, no interference being recommended unless middle-ear suppuration occurs, or deafness is considerable or mouth-breathing persistent. He disapproves of the removal of tonsils and adenoids at an out-patient department with immediate return of the child to what is often a dirty environment. In his experience (and others will concur with him) suppuration is often thus set up in previously intact ears. In order to prevent acquired deafness he considers that aural complications of infectious disease occurring in hospital should be treated by an otologist; he would make meningitis of all kinds notifiable, as well as congenital syphilis, when opportunity would often arise for treating deafness in the whole family. Hospital accommodation for operative treatment of the post-nasal space and of the ear itself in cases of chronic discharge he would like to see extended. The book finishes with a consideration of hereditary deafness and a discussion of its transmission on Mendelian laws. The rules which the author lays down are that the hereditary deaf should not marry, nor should their hearing relatives; cousin marriages should be avoided; the mentally defective deaf and the epileptic deaf should be segregated during the whole of their lives. This portion of his book makes interesting reading. Dr. Love construes personal freedom not only as the right of the individual to live his own life as seems best to him, but as a good citizen to protect the State against the danger of the decrease of the fit and the increase of the unfit.

The After Treatment of Wounds and Injuries. By R. C. ELMSLIE, M.S. Lond., F.R.C.S. Eng., Brevet-Major, R.A.M.C. (T.F.), &c. With 144 illustrations. London: J. and A. Churchill. 1919. Pp. 319 + vi. 15*s*.

A NUMBER of books on military orthopædic surgery have lately appeared, some of which have been noticed in our pages. An important one is Major R. C. Elmslie's. Although the author disclaims any pretensions to have written a complete account of the principles and practice of orthopædic surgery, he has here given a fairly complete story of military orthopædics. His work at the large hospital at Shepherd's Bush, and his experience of the practice at many other military orthopædic hospitals have given him an exceptional knowledge of present-day practice. The short preliminary chapter on the principles of reparative surgery is useful as defining the objects to be aimed at by the orthopædic surgeon. Chronic disease of bone and persistent sinus leading down to diseased bone have caused some of the greatest difficulties to surgeons during the last four years, and want of

knowledge of the best ways to treat such conditions has kept many patients in hospital many months longer than should have been necessary. Major Elmslie's chapter on this subject and the writings of Captain Renfrew White and others have now left surgeons without excuse for temporising and timid treatment. The details of a typical operation for such a case are well described and are illustrated by photographs of an actual operation. It is noteworthy that the author advises the use of a tourniquet when possible, so that a bloodless field of operation may be secured, and also that, following what is more an American than an English practice, he does not remove the tourniquet until the wound has been closed and dressed.

Vicious and delayed union and non-union of fractures receive due attention. In this connexion an interesting series of illustrations is given, showing the condition of the leg bones after bone-grafting in a case of loss of the tibial shaft at various periods from six weeks to five years after operation. Referring to ankylosis, Major Elmslie says that "nothing in surgery is more difficult than to lay down rules for the treatment of stiff joints"; he gives, however, a good résumé of the various methods in vogue. The comments on the treatment of flail joints and injuries of muscles, nerves, and skin are sound and practical. It is one of the ironies of fate that only now that (it is to be hoped) the inflow of casualties has as good as ceased, has the question of amputation been generally looked at from the point of view of function, with a sufficiency of knowledge by the operating general surgeon. A study of a large number of stumps in any limb-fitting hospital, together with the histories of the cases, tends to enforce the conviction that often bone has been needlessly sacrificed which might have been of inestimable value to the patient when he comes to wear a prosthesis. The relative importance to the patient of length of bone in various parts of the limb can be best appreciated by those who have to do with the fitting of artificial limbs and with the training of amputees in the use of them. Major Elmslie has had this experience and therefore his advice in the chapter on amputations should carry great weight with the operating surgeon. The chapter on splints and on plaster-of-Paris technique will repay study.

The Normal and Pathological Histology of the Mouth, being the second edition of *The Histology and Patho-Histology of the Teeth and Associated Parts*. By ARTHUR HOPEWELL-SMITH, L.D.S. Eng. With 647 illustrations. London: J. and A. Churchill. 1919. Vol. I., pp. 346; Vol. II., pp. 473. £2 2s.

THIS book is the best published on the Histology and Patho-histology of the Teeth; the reservations which we make below do not alter the verdict. Also the illustrations portray in every detail the appearances of the microscopical anatomy of the teeth.

The first volume is divided into three parts: (1) the dental tissues; (2) the oral tissues; (3) the histogenesis of the teeth of mammals, fish, and reptiles. The author gives a very clear description of the dental tissues and discusses fully the different views held about "enamel spindles." The chapter on cementum is enriched by the reproduction of several beautiful photomicrographs by Norman Broomell. The author holds that cementum in man is usually free from lacunæ and canaliculi, "being nothing more nor less than a dense, solid, nearly homogeneous band of calcified basis-substance"—a view from which we think many histologists will dissent. With regard to the nerves of the pulp he considers that "the actual methods of the peripheral distribution of the myelin (medullated) nerves is buried in obscurity." The only inference to be drawn from this statement is that the author does not accept the views of Mummery. This observer has demonstrated to the satisfaction of many competent histologists that the nerves enter the dentinal tubes in company with the dentinal fibril, and we regret that the author of this book does not acknowledge this fact, even though it is in variance with his views. The account of the development of the teeth in mammals, fish, and reptiles is excellent, and is accompanied by several new illustrations.

The second volume is also divided into three sections: (1) the dental tissues; (2) the oral tissues; (3) the extra-oral dental tissues. In several respects this volume is disappointing in comparison with the first volume, and one has a feeling in reading the text that the author has not a sufficient clinical experience. We are told that "little is known of the origin of erosion." Apparently the view of Miller that erosion is simply due to the abrasive action of tooth-brush with tooth-powders does not find favour with the author. Clinical experience has supported Miller's view, and there is no question that erosion is simply due to abrasion. In this connexion it is of interest to note that during recent years tooth-soaps have replaced tooth-powders, and that synchronously with this erosion has been less common.

The author's interpretation of pathological specimens is at times misleading. For example, we have introduced a term, "diphyodontic gemination," to describe a condition in which he considers a deciduous tooth has become firmly united to a member of the permanent series. The specimens he figures are examples of injury to permanent teeth at a stage when a small portion of crown has been formed; in other words, they are examples of "dilaceration." In this volume the author's best effort is the portion dealing with pathological conditions of the pulp, and he gives a particularly lucid account of fibroid degeneration. The chapter on pyorrhœa alveolaris contains excellent illustrations of the patho-histology of the tissues; but here, again, the author's views of the origin of this disease are at variance with the views of those who have devoted attention to the subject. To state that the condition does not begin as a gingivitis is a direct contradiction of a clinical fact.

We hope that in future editions the author may see his way to bring his observations in the laboratory more into line with clinical evidence; in this way he will improve his already valuable work.

Technical Handbook of Oils, Fats, and Waxes. By PERCIVAL J. FRYER, F.I.C., F.C.S., and FRANK E. WESTON, B.Sc., F.I.C. With 69 illustrations. Vol. II., Practical and Analytical. Cambridge University Press. 1918. Pp. 314.

THE first volume of this work dealt with the chemical and technical side of the subject; it is now succeeded by a second volume presenting an account of the practical examination and analysis of the natural hydrocarbon (mineral) oils, fats, and waxes Physical and chemical processes alike are clearly described, proving the authors' familiarity with the modern laboratory methods employed in the differentiation of oils, fats, and waxes. Many of these processes have received revision during the past few years, as a study of the book shows. There are some good illustrations which serve as a guide to the kind and arrangement of apparatus used in the operations. The authors have covered the ground very completely in regard to the range of materials capable of analysis, and also to the methods of examination involved. The instructions as to procedure are uniformly given in a concise way, and are generally expressed in the indicative mood. The numerous tables of constants given are a valuable feature of the book.

JOURNALS.

The Quarterly Journal of Microscopical Science. Edited by Sir RAY LANKESTER, K.C.B., F.R.S., &c., with the coöperation of Professors HICKSON, BOURNE, GRAHAM KERR, and MACBRIDE. Vols. LXII. and LXIII. (Parts 1 and 2), November, 1916–August, 1918.—*Journal of the Royal Microscopical Society*. Edited by CHARLES SINGER, M.D., F.R.C.P., with the assistance of the Publication Committee and Professor ARTHUR THOMSON, A. N. DISNEY, A. B. RENDLE, R. M. JONES, and R. ST. JOHN BROOKS. Part 4, December, 1918.—The *Quarterly Journal of Microscopical Science* has shown no diminution during the last two years of the war either in bulk or in the importance of the matter contained in the "parts" noticed here. It maintains its position as the leading journal devoted to animal morphology in this country and one of the foremost in the world. Among the reasons for this predominance is the fact that the contributors include very nearly, if not quite, all of the principal students of this department of science in our country, as well as others from the Colonies, America, and the Continent. Furthermore, a glance at the index of the preceding volumes (Vols. XXIX.–LXI.) which is included in the first part of Vol. LXII. and which is the work of Mrs. Goodrich (herself a contributor to the *Journal*) will show that no one or two or three persons monopolise the pages; there is thus no bias in particular directions. The variety of memoirs in the parts now under review bears out these statements, and makes it rather difficult to give an adequate account of their contents. We must select merely a few of the 30 communications for brief comment. One of the most interesting papers in this series is at the same time the shortest. In four pages Mr. J. Bronte

Gatenby, of Jesus College, Oxford, repeats experiments of Loeb on artificial parthenogenesis, and after due exclusion of sexual possibilities, causes the eggs to produce tadpoles by merely pricking with a fine glass needle. One of these tadpoles was successfully reared to an age when it showed definitely the existence of testes. There is no record of the successful rearing of any of them to adult conditions as was done by Loeb. This confirms the idea that sperm fertilisation is replaceable by a mere mechanical stimulus, as it has been also shown to be in other animals (e.g., sea urchins), by a chemical stimulus. This enormously important subject is attracting great attention, as it obviously will throw light upon heredity and the truth or otherwise of hotly debated and current theories. In another paper Mr. G. L. Purser, of Trinity College, Cambridge, relates facts in the development of the spleen in the Dipnoan fish of both the known genera, *Lepidosiren* and *Protopterus*. It is to be noted that although arising in close relations with the intestine the "gland" is not, as it has been stated to be in the past, derivable from an outgrowth of the gut. Dr. S. F. Harmer, recently appointed director of the Natural History Museum, describes an old but little known species of *Phoronis* (*P. ovalis*); and another purely zoological paper is that of Dr. W. T. Calman upon the Minute and Primitive Crustacean *Bathynella* discovered originally in a well at Prague by Dr. Vejdovsky, now, or at any rate lately, principal of the Bohemian University of that city.

Of entirely different character is the *Journal of the Royal Microscopical Society*. Its original papers are in this part, as very frequently, devoted to the technicalities of microscopy. The main feature of the *Journal* is its excellent brief accounts of current scientific literature. In addition to these departments the affairs of the Society are set forth, and include some valuable obituary notices of deceased Fellows. The present part contains a well written and rather full biography, with an excellent portrait of the late Mr. H. G. Plimmer, F.R.S., which will interest many readers of THE LANCET, as well as many other friends unconnected with the professions of medicine and surgery.

Archives de Médecine et Pharmacie Navales.—In the December (1918) number Dr. Gaston Laurès completes his very interesting analysis of the discriminations between the various mental and nervous diseases. His method may be suggested by stating the points on which he relies for distinguishing a hysterical from an epileptic seizure. The hysterical person falls easily, does himself no harm, and the fit is excited by an emotion or a memory; the epileptic falls without cause and may hurt himself. Hysterical convulsions are mainly in the limbs and are clonic; the epileptic spasms are more prolonged. The epileptic bites his tongue and micturates involuntarily; the hysterical person never. The epileptic convulsion is soon over; the hysterical is prolonged the more spectators there are and the more fuss they make over the poor patient. Recovery from an epileptic fit is slow, and there is a period of mental confusion and no tears; the hysterical person recovers at once completely, but weeps. Only the epileptic fit is followed by headache, usually severe, and only the epileptic seizure occurs during sleep. Dr. Laurès lays great stress on the occurrence of micturition and the state of mental confusion which follows the epileptic fit. It will be seen that this differential diagnosis follows exactly the old lines.

In the January number is a posthumous paper by Surgeon-Captain Tribondeau (whose papers on tubercle in the French fleet and other subjects we have often brought to the notice of readers of THE LANCET), on the diagnosis and discrimination of typhoid and paratyphoid fevers by blood culture. He inoculated the blood into sterile ox-bile. If after incubation the bile remained clear these fevers were not present. If the bile was turbid without bubbles, typhosus only was present. Paratyphosus caused small bubbles, and A and B are discriminated by their action on lactose-gelatine-acetate of lead, para. B blackening the culture along its growth, while para. A does not.—Dr. Viguier and Dr. Jean report a case of extensive sloughing of tissues in the buttock as the result of air embolism of the superior deep gluteal artery as an outcome of deep diving at 15 fathoms.—Dr. Hamet complains that at Dakar, where malaria is rife, the antimalarial measures long ago recommended are still uncommenced, though 200 cases are annually reported for each 100 of European personnel. It has been recommended to fill in a swamp to windward of the town, to separate the native quarters from the European town, or at least from the naval barracks, and to give the men mosquito nets which are untorn, are in good order, and do not let mosquitoes through. In reading this paper it occurred to us what a great scope there is for medical inspectors of ability and character, who should inspect and furnish medico-topographical reports on foreign stations, noting the attention to, or the neglect of, sanitary precaution that they observe in each district. Parliament would thus become aware what was really being done by local authorities for the care of the lives of the Englishmen and the natives for whom they are responsible.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

PETROLEUM JELLIES ("SEMPROLIA" BRAND).

(WILLIAM BROWNING AND CO., ALBERT WORKS, PARK-STREET, LONDON, N.W. 1.)

THE purification of petroleum preparations for use in medicine has now almost reached finality, so spotlessly white and neutral are the products obtained by the refining processes adopted. As an illustration of this we may mention four different grades of petroleum jellies submitted to us by the above manufacturing chemists. First comes a remarkably white specimen of paraffinum molle known as "Semprolia" No. 1 superfine white petroleum jelly." Its claims to purity, according to our examination, are well founded. It shows a melting-point *circa* 46° C., and a perfectly clear colourless oil results. It is entirely free from saponifiable fats and is quite neutral to both red and blue test paper (litmus). It is a pearly-looking jelly, fulfilling all the requirements of the British Pharmacopœia, and so is well adapted for both internal and external use. It serves as an admirable vehicle for many medicaments, notably menthol, thymol, salicylic acid, and several of the alkaloids. No. 2 "Semprolia" jelly, a cream-white grease, shows a melting-point, according to our examination, of *circa* 43° C. and the same melting-point is shown by a pale yellow variety and an "amber soft paraffin" designed for veterinary use. It will be seen that with the degree of purification raised the melting-point is somewhat higher on the scale.

AMIBIASINE.

(THE ANGLO-FRENCH DRUG CO., LTD., GAMAGE BUILDING, HOLBORN, LONDON, E.C. 1.)

Amibiasine is described as a compound extract of garcinia (the mangosteen of India and China). This solution obtained from the cortex of *Garcinia mangostana* is an amber-coloured fluid containing the menstrua, alcohol and glycerine and the intensely bitter principles of the bark. On drying on the water-bath the residue amounted to 9·95 per cent., and on ignition an ash amounting to 0·19 per cent. remained. This in water was alkaline. According to the perchloride of iron test tannin has been carefully excluded, for no darkening resulted on the addition of this reagent. Neither did it respond to general tests for alkaloids, and its therapeutic value probably is due to a glucoside. Some experience of this value in the treatment of amœbic dysentery, diarrhœa, and enteritis was gained in the military and general hospitals during the war, and the claims of amibiasine received acceptance, it is stated, from the French Military Medical Board. The most important suggestion in regard to it appears to be that, while in the treatment of amœbic dysentery by emetine the cysts in the bowel are left intact leading to relapse, treatment by amibiasine anticipates and prevents this contingency. We note that while this is a special preparation of *Garcinia mangostana*, an extract of the rind and one of the fruit of the tree are mentioned in Indian text-books on Indian plants and drugs as having been employed as remedies in chronic diarrhœa and dysentery, usually in the form of a syrup. Amibiasine will no doubt receive the further trial which it can fairly call for.

VALENDA SPRAY.

(LAWSON AND CO. (BRISTOL), LTD., ST. PHILIPS, BRISTOL.)

THIS is a clear, light-brown, oily fluid with agreeable fragrant odour of certain essential oils of the germicidal value of which there is no doubt. With water it forms instantly a perfectly uniform white emulsion which at a certain dilution is used in the spraying apparatus. The emulsion shows a slightly alkaline reaction, and the oil on burning completely leaves a small ash which is decidedly alkaline. The emulsion is not cleared by shaking with fat solvents, but is cleared by the addition of an acid. The spray renders the air neither sickly nor irritating, used in proper proportions. It does not contain formaldehyde. The whole result aimed at by the use of atmospheric sprays may be open to criticism, as likely to lead to the provision of a less abundant supply of pure fresh air, but as an effective scouring agent of the air of the workshop when work is over, or of the theatre when the performance is over, the application of a germicide spray may be recommended.

THE LANCET.

LONDON: SATURDAY, MAY 24, 1919.

Women in Industry.

THE report of the War Cabinet Committee on Women in Industry, which has just been presented to Parliament, is a document of the first interest. The Committee, it may be remembered, was composed of the following members: Sir J. R. ATKIN, Miss JANET CAMPBELL, M.D., Sir L. L. MACASSEY, K.C., Sir W. W. MACKENZIE, K.C., Mrs. SYDNEY WEBB, and Sir MATTHEW NATHAN, who acted as secretary, assisted by Mr. J. C. STOBART. For a time Mr. J. L. HAMMOND sat on the Committee as representative of the special Women's Employment Committee of the Ministry of Reconstruction. The War Cabinet Committee was appointed to investigate and report on the relation which should be maintained between the wages of women and men, having regard to the interests of both, as well as to the value of their work. Further, the Committee was asked in its recommendations to think not only of the output necessitated by the war, but of the progress and well-being of industry in the future. Several alterations in circumstances since the original reference to the Committee have obviously taken place, owing to the suspension of hostilities, making the output of war material a matter of history, while the grant of unemployment donations introduced a new factor into the deliberations. The report took definite colour from these circumstances.

The recommendations of the Committee, dealing with the principles governing the relations between men's and women's wages—alike those suggesting the respective remuneration of men and women, those dealing with the conditions of the future employment and wages of women, and, lastly, those replying to the various allegations as to non-fulfilment of Government pledges to women—will certainly be circulated in full for the immediate and earnest attention of all employers and all employed, which in the Great Britain of the future is another way of describing the great majority of the adult population. They form 31 brief, businesslike, and drastic messages to the public, and are covered to some extent by the first, which runs: "That women doing similar or the same work as men should receive equal pay for equal work in the sense that pay should be in proportion to efficient output." This recommendation is intended to cover the principle that on systems of payment by results equal payment should be made to both sexes for equal accomplishment, while the relative value of the work done by women and men employed on time, on the same or similar work, should be agreed between employers and trade-unions, acting through recognised channels of negotiation, as, for instance, Trade Boards or Joint Industrial Councils. The recommendations take note of the introduction of women to do work hitherto performed by men, the onus of proving that the women's work is inferior to the men's work lying with the employer; and if, in order to maintain the principle of equal pay for equal work, it is essential to employ men and women of the same grade, capacity, and training, equal pay is found not to attract the same grade of man as of woman, then the difference of attractiveness, it is suggested, may be counteracted by the payment to married men of children's allowances. It is unnecessary to medical readers to dwell on the vital importance of this recommendation. A valuable memorandum from Dr. JANET CAMPBELL upon the health of women in industry follows the majority recommendations of the Committee, from which Mrs. SYDNEY WEBB alone dissents in a minority report. Mrs. WEBB dwells on the industrial chaos produced by the war, rejects the principle of individual bargaining and the formula "equal pay for equal work," and recommends the adjustment of money wages to meet increases in cost of living, and the adoption of the principle that there must be closer correspondence of occupational rates to relative efforts and needs. Mrs. WEBB'S able document indicts the Government for ignoring the pledge given to women that, where substituted for men in the performance of war work, they should receive the same pay.

The relation of men's and women's wages being clearly dependent in large measure on the relative health and physical capacity of the two sexes—for physical and industrial efficiency are mutually interdependent—the medical issues raised by the inquiry are thus fundamental, and Dr. JANET CAMPBELL has dealt with them thoroughly. After discussing the general and physiological considerations arising out of the physical development of women, the function of maternity, the relative amount of food required by men and women respectively, and the particular bearing of industrial fatigue and its causes in relation to women, Dr. CAMPBELL outlines the conditions in which women were employed prior to the war. It is difficult to differentiate the effect of employment upon the health of the woman worker from the effect of social conditions in general—indeed, Dr. CAMPBELL says that it is admitted to be impossible to obtain particulars of the occupational death-rates of women, and not easy to state definitely the ailments which arise directly from employment; but she comes to the conclusion that while the conditions of work have been such as not to cause actual disablement and disease, they have favoured general constitutional ill-health and lowered power of resistance. Women have been attracted by the conditions of work yielding relatively high pay, and neither they nor their employers have appreciated the serious damage to health which might possibly result. This is a state of things which existed before war employment exaggerated its effects. The incidence of sickness among women was revealed for the first time under the operations of the National Health Insurance Act, when a remarkable frequency of minor and major sickness among girls and young women came to light. The Departmental Committee on Sickness Benefit

Claims, appointed under the National Insurance Act to inquire into alleged excessive claims in regard to sickness benefit, showed a great deal of anæmia and debility directly attributable to the conditions of employment, and proved that the impression among medical men that the amount of sickness was greater among women than among men was justified beyond a doubt. Further evidence received by the War Cabinet Committee has supported and emphasised the fact. Again, an indication of the injury to health which may follow increased industrialism among women is suggested by the rise in the tuberculosis death-rate during the war. A Special Committee of the Medical Research Committee, under the chairmanship of Dr. LEONARD HILL, has, in the columns of THE LANCET,[1] discussed recently the high incidence of phthisis in the urban male population, and Professor BENJAMIN MOORE, a member of this Special Committee, pointed out that after the thirtieth year of age there was found a great preponderance of the disease among urban males not shared by females, attributing the circumstance to the conditions of daily occupation. Since 1914 the mortality rate of tuberculosis among urban women is shown by Dr. T. H. C. STEVENSON, Superintendent of Statistics, General Register Office, in a review of the vital statistics of the country for 1916, to have undergone substantial increase, and there is no doubt that the subjection of women, at a susceptible age, to increased risks of infection has had a serious outcome. Dr. JANET CAMPBELL'S general conclusions cannot be summed up by stating that the average woman is physically weaker than the average man, but her opinion that she cannot compete with him satisfactorily in operations requiring considerable physical strength will be generally accepted. Competition between the average man and the average woman in operations of even a less arduous and exacting character may be detrimental to the woman's health, in that her power of endurance and her reserve energy are usually less than a man's, while she is often obliged to spend time and strength on domestic tasks which do not fall to his lot. That is the great point, and this valuable report teems with information to us all as to the various social difficulties which underlie the situation, their causes, their fostering influences, and their remedies.

The Hygienic Conscience in Relation to Coal-getting.

THE Coal Industry Commission as they proceed with their deliberations are clearly establishing one fundamental matter—viz., the absence of reliable and scientifically collected information relating to the social conditions and well-being of miners, and yet, after agriculturists, they form numerically the largest industrial group in the kingdom. When the question of their hours of labour was under review no information was forthcoming as to the interdependence in the mining industry of fatigue and output; or as to the effect upon working capacity of the high humid temperature often existing in mines. The housing conditions are now admitted to be bad, but no investigation has established the number of miners' families domiciled in one, two, three, or four rooms; but the conditions were drawn attention to in CHADWICK'S reports as long ago as 1842. Beat knee, beat hand, and beat elbow occur, but their distribution according to process is not worked out. The miner is compensated, the owner is insured; there the matter ends. The miner works in darkness, and may say with Wên T'ien-hsing: "My dungeon is lighted by the will-o'-the-wisp alone; no breath of spring cheers the murky solitude in which I dwell"; nystagmus follows; the miner is compensated; the owner is insured; no remedy is found. Explosions and accidents occur, and these are considered in a fashion. They are intimately associated with getting the coal upon which dividends and royalties depend, and they must be kept in check somehow.

Evidence is presented that the mortality of miners, apart from accidents, compares not unfavourably with that of agriculturists. True; but mortality rates do not tell of oscillating eyeballs and crooked joints. Compare rather a miner 70 years of age—there are a few—with an agricultural labourer of that age. Yet evidence has declared that the miner must once have been strong in wind and limb in order to have become a miner. Appeals to statistics resemble the waters of the Dead Sea—buoyant, indeed, but brackish: no amount of figures will make us think well of the social conditions at present existent in the mining industry. Whatever step may be taken with regard to the nationalisation of mines, we would urge with all emphasis that immediate action be taken on the lines suggested by Dr. FRANK SHUFFLEBOTHAM, who gave evidence out of his experience in the Ministry of Munitions. His recommendations were:—

1. That provision be made for reducing the temperature of hot seams in the coal-mines, and that a temperature of greater than 77° (Fahr.) (wet bulb) be regarded as injurious to the health of the worker.
2. That the question of increased candle-power of the miners' safety lamp be considered without delay.
3. That the housing question of miners be dealt with in a practical way, and with all possible speed.
4. That investigations be made by a Research Committee as to the causation and prevention of miners' diseases.
5. That means be taken to ensure the best possible after-treatment for miners who sustain injuries or contract diseases which are directly due to their employment in the mines.

The first of these recommendations embodies the actual standard adopted in France, and every one of them requires only a moment's attention to see that it embodies a practical reform. That improvements in conditions of labour are possible of attainment under State control has recently been demonstrated by the pioneer work of the Ministry of Munitions during only three years. Workers were housed; canteens were erected; washing accommodation and cloak-rooms were provided; personal supervision was established; and doctors working whole-time were appointed to different factories, directed in their work by a medical headquarters staff associated with a

[1] THE LANCET, Nov. 9th (p. 618) and 16th (p. 680), 1918.

research branch—nine doctors in all. The contrast between these activities and pre-war formal enforcement of the minimum requirements of the Mines and Factory Acts is startling; for example, the total medical staff then numbered three, none of whom were concerned with mines.

The creation of an adequate expert organisation is not in itself enough; it must be given adequate power and direct access to the Minister concerned. Possibly in the past lack of this power, while control lay with officials who sat in high places with no technical training and no personal acquaintance with the social life of the community, somewhat explains why the hygiene of industry has fallen behind the times; it may also explain why so little has been done to foresee and prevent the industrial crisis through which we are now perilously passing; the warnings were clear for those who ran to read, but perhaps not for those who sat. Considerations such as these should weigh with the Commissioners, who may justly find themselves as critical of the miners as of their employers in regard to the cardinal fact that each side holds the call to health in absolute contempt. In relation to coal-getting there is no hygienic conscience which is moved to action either among employer or employed.

The Brain-worker's Diet.

OFFICIAL food control comes to an end, so we are led to suppose, during the course of the present year. The change will be enormous, as recently 85 per cent. of the total food of the country has been bought and sold by the Government. Milk has been singled out as a special object for continued official attention, while the Labour Party are the only dissentients from the return to the old principle of survival of the fittest among food products, for they desire to maintain food control. Their desire for control at first sight seems curious, but the attitude is dictated by a share-and-share-alike principle. But whatever happens to wholesale official control, the question of individual control, thrust upon the notice of many people for the first time during the war, must continue to receive attention. The brain-worker, using the term in its widest sense, has especial need to give the matter thought. For the purposes of nutrition the brain-worker may be defined as one who does not earn his living by muscular work; whether he uses his brain little or much is immaterial from the physiological standpoint, for brain-work has never been shown to increase metabolism or, therefore, to justify per se an increase in food intake. The group in consequence is a large one. The brain-worker's diet has been made the object of concern by the National Food Reform Association, which has issued at a penny a leaflet making suggestions for his guidance. The recent Report of the Food (War) Committee of the Royal Society also deals scantily with the same subject. The report, indeed, frankly emphasises the inadequacy of the material available for forming conclusions or framing advice. Special data on the diet of the over-fed are badly needed.

It is of common observation that of two men of similar physique and similarly sedentary habits one may take in with his food about double the number of calories that the other takes, both apparently remaining healthy. What happens to the excess of food in the first case? If the observation is correct, and it rests more on general impressions than on precise observation, it is probably because there are degrees of the sedentary life. The brain-worker who travels by tram or other vehicle from his residence to his place of work, where he sits all day in an atmosphere which makes little demand on his heat production, riding home again in the evening and spending his leisure time by the fireside, is in a very different position from another who walks rapidly to and from his office, where he stands or walks at his work and where the conditions of ventilation make his environment stimulating. A nominally sedentary occupation may be accompanied by a restless habit of body in which the muscles retain the capacity of metabolising considerable quantities of carbohydrate and fatty food. Many brain-workers, from lack of athletic training, use their muscles, when they use them at all, in an inefficient way. Experience shows how rapidly they become tired and stiff under these conditions. Probably a small kinetic result in the brain-worker is sufficient to produce a large amount of muscular metabolism, and it is more than possible that a period of active exercise before office hours begin may set the pace of muscular metabolism for some considerable part of the day. Associated movements occur in many active brain-workers; some write with the tip of the tongue and probably with other muscles not directly required for the purpose. With others mental concentration is attended with a general tenseness of the muscles.

The ideal diet for the pure brain-worker has still to be devised. It has even to be determined whether the condition of pure brain-work is consistent at all with healthy existence. Notable instances of politicians who take no exercise worth mentioning will occur to mind, but they are admittedly exceptional. With most sedentary workers the desire for food is in excess of the caloric needs of the organism, and human nature, although heroic in emergency, will nearly always break down before the constant temptation of an appetite which can be readily gratified. During the war in certain quarters exercise was discouraged for brain-workers on high patriotic grounds, that there was, in fact, no supply of food available for the athletic gratification of drones. Now that this reason is no longer cogent brain-workers may well consider whether, with increasing opportunity of dietary licence, they will not find it more expedient to adopt an active habit of life rather than to practise an almost impossible self-denial. The matter is not by any means one of theoretic importance only. The unfitness of office livers has been brought home to the nation by the evidence of the National Service Boards, and probably the low animal physique of the urban brain-worker in this country before the war was more deplorable in its aggregate sum than all other conditions of disease or disorder put together. The brain-worker should mind his ways.

Annotations.

"Ne quid nimis."

THE RECENT INCIDENCE OF SMALL-POX.

IN THE LANCET of March 8th reference was made to the incidence of small-pox in different parts of the country since the beginning of the year. At that time there had been 29 cases in England. We understand that since then some 60 further cases have occurred in England and Wales in the following sanitary districts, namely:—

Metropolitan borough of St. Pancras, 4 cases; metropolitan borough of Islington, 2 cases; metropolitan borough of Hammersmith, 1 case; Hartlepool urban district, 1 case; Hartlepool rural district, 2 cases; Port of Liverpool, 1 case; county borough of Birkenhead, 1 case; Ilford urban district, 1 case; Amersham rural district, 4 cases; Chorley Wood urban district, 2 cases; county borough of Derby, 1 case; Pontefract urban district, 12 cases; Plymouth Port, 2 cases; Bury St. Edmunds, 4 cases; county borough of Darlington, 1 case; county borough of East Ham, 1 case; Featherstone urban district, 1 case; Port of London, 6 cases; Dore rural district, 1 case; Bishop Stortford urban district, 2 cases; Thingoe rural district, 1 case; metropolitan borough of Poplar, 1 case; Penge urban district, 1 case; county borough of Croydon, 7 cases; Finchley urban district, 2 cases; the county borough of Cardiff, several cases.

In half a dozen instances the disease appears to have been introduced into the affected districts by demobilised soldiers, and the history was generally to the effect that the soldiers had returned to this country through Italy and France and had called en route at Taranto and Havre. The dates of onset of illness were in most instances consistent with the theory that they had acquired infection after arrival in Italy and before departure from France. They passed through demobilisation camps and ports while incubating the disease, and the first symptoms generally commenced to manifest themselves after the men in question reached their homes. On account of the modification of the disease produced by infantile vaccination the true nature of the malady was not recognised in the soldiers, but when it spread to others, and especially to unvaccinated persons, the diagnosis of small-pox presented no difficulty. In other instances the disease has been brought to this country by sailors and persons returning from Portugal, where there is at present considerable prevalence of small-pox. As the voyage from Portuguese ports, such as Lisbon, is of relatively short duration, such persons generally reach British ports while incubating the disease, and, owing to the habits of seamen, the nature of the illness at its onset is liable to escape detection.

All medical men and nurses who are at all liable to come in contact with small-pox should at once be revaccinated. This appears a very elementary form of advice, and we should not have thought it necessary to give it were it not for the fact that it has come to our knowledge that more than one medical man has recently suffered from the disease contracted from the patient he has been summoned to attend, while a nurse sent into a small-pox hospital and not vaccinated until the day after she went on duty contracted the disease. Another nurse attending a patient the true nature of whose illness had not been recognised contracted small-pox and died. Unfortunately, also, an employee of one of the sanitary authorities, who disinfected premises which had been occupied by a small-pox patient, appears to have conveyed the infection to his family. All sanitary officials should, of course, be revaccinated as soon as, or preferably before, small-pox appears in the district. In the case of those with families each member of the family should be vaccinated or revaccinated, as the case may be. Ward-maids and porters at small-pox hospitals and ambulance drivers and undertakers who may have to come in contact with small-pox should also be vaccinated, and in view of the number of cases of the malady occurring in different parts of the country at present vaccination or revaccination as a precautionary measure would be reasonable.

THE RETIREMENT OF SIR WILLIAM NORMAN.

Surgeon Vice-Admiral Sir William Henry Norman, K.C.B., Director-General of the Medical Department of the Royal Navy, is, at his own request, vacating that office, which he has held for the last two years, at the end of this month. He will be succeeded by Surgeon-Captain Sir Robert Hill, K.C.M.G., C.B., who was principal medical officer of the Grand Fleet during the war. Sir William Norman has had a long and distinguished career with the Navy. Entering in August, 1882, he was mentioned in despatches when surgeon of the *Reindeer* for his treatment of the wounded after an attack on a slave dhow at Zanzibar in 1887. Seven years later he served in the expedition landed by Admiral Rawson at Mombassa for the punishment of a rebellious Arab Chief, the expedition resulting in the capture of M'weli, when for his services Sir William Norman received the General African Service medal. In 1907 he was a member of the Committee on Naval Medical Service and later became a naval member of the Medical Consultative Board, was promoted Surgeon-General, and in 1916 received the C.B. In the third year of the war he was appointed Director-General of the Navy with the rank of Vice-Admiral, receiving the K.C.B. in 1918. During his office as Director-General of the Navy he became Chairman of the Administration Committee of the Air Force Medical Service. Sir William Norman has an hereditary right to success and honour in the Navy. His grandfather and three of his great-uncles served in the Navy. His father was a paymaster at the age of 21, and held the Baltic and China medals. Four of his uncles served in the Navy and his own two sons are following suit. Sir William Norman's two years of office as Director-General of the Navy will leave their mark on the Service which he loved. Outside his general activities he spared no effort to improve his Service and to remove legitimate grievances, his personal attributes assisting his efforts in a remarkable way. The whole Navy will regret his voluntary retirement after 35 years of distinguished service.

COLLAPSE THERAPY OF LUNG GANGRENE.

A SHORT time ago M. Émile Weil suggested the treatment of gangrene of the lung by induction of pneumothorax.[1] At a recent meeting of the Société Médical des Hôpitaux of Paris M. A. de Verbizier and M. Loisleur reported the following case, which confirms the value of M. Weil's treatment in this often intractable affection. A young soldier was admitted into hospital on July 13th, 1918, with a severe attack of influenza complicated by pneumonia on the right side. The disease ran a usual course until the 20th, when the breath and sputum became horribly fœtid and signs of a cavity at the base were observed. The general condition became

[1] THE LANCET, Nov. 30th, 1918, p. 753.

worse, and on the 24th radioscopy showed consolidation of the right lower lobe with a cavity in the centre into which the right bronchus passed. At its lower part a horizontal line revealed a collection of fluid. The base of the cavity was some millimetres above the arch of the diaphragm, which was acting normally. Under the control of the screen pneumothorax was induced and 200 c.cm. of air introduced into the pleural cavity. At the end of the insufflation the manometer showed a positive pressure, and radioscopy revealed that the lung was separated from the diaphragm and chest wall by the space of the breadth of a finger. However, the pulmonary cavity had not sensibly diminished. Nevertheless, the pressure exercised by the pneumothorax seemed immediately to have a good effect on the evacuation of the cavity. For an hour the patient easily expectorated a large quantity of pus, and on the following days all the symptoms, except the fœtor of the sputum, which was always extreme, improved. The improvement was only temporary, and on the 28th radioscopy showed that the pneumothorax had been partially absorbed. A greater insufflation (800 c.cm.) was performed, giving a manometric pressure of + 4. The screen then showed a total pneumothorax and marked compression of the cavity, which was diminished in all dimensions. All symptoms immediately improved. Some hours after the second induction a large quantity of pus was expectorated and on the following day the sputum was much diminished. In the following week the fœtor progressively diminished and the cavity was completely drained. Appetite was then regained and convalescence began. At the same time radioscopy showed diminution in the size and transparency of the cavity. A fortnight after the operation *restitutio ad integrum* of the pulmonary parenchyma was found. During this time the pneumothorax was completely absorbed. Before the insufflation the cavity was being drained by the right bronchus, but insufficiently. The radioscopic examination suggested the advantage of improving the drainage by producing a positive intrapleural pressure. M. de Verbizier and M. Loisleur consider that this is the best treatment for pulmonary gangrene, but its success depends on certain anatomical conditions which are not always present. The pleura must be free from dense adhesions, the lung must be compressible, and the bronchial drainage of the cavity sufficient. It would be dangerous to strongly compress a collection of fœtid pus and gangrenous material for which the sole outlet was a narrow bronchus. To appreciate these conditions and to base the ideal treatment upon them the authors held radioscopic control to be indispensable.

HUNGER AND DISEASE IN CENTRAL EUROPE.

THE news announced by Sir David Henderson, the first director-general of the International Red Cross League, that 100,000 cases of typhus are reported in Poland at the present time and that the disease is already endemic in Belgrade and Hungary, is of serious import to the whole world. Nothing is said, perhaps because nothing is known, of typhus in Russia and amongst the enemy peoples of Central Europe, but it is certain that all the conditions necessary for a widespread pandemic of this disease are present in these countries. As long ago as April 9th the Allied Mission to Vienna were unanimous in reporting that food conditions there were worse than at Prague, Lemberg, or any other part of Europe which they had visited. Starving Austrian children were then being sent to Switzerland, many of them arriving in "an almost hopeless condition, unable to digest even diluted milk." There is every reason to fear that since that time the conditions have not improved. The Vienna correspondent of a German medical paper, whose account we summarise on p. 921, brings the facts a few days later. Mr. H. N. Brailsford, who returned from Berlin on May 19th and spoke at the Albert Hall the same evening, described a riot which he had witnessed in Vienna, in which a policeman had been dragged from his horse and the animal literally torn to pieces by a starving mob. The conditions in Vienna, in Budapest, in Berlin, and amongst the millions of Russia may create a problem which will try the resources of the medical faculty all over the world. Plague is no respecter of persons, and is not easily confined to foreign lands. It is true that in some instances there has been a slight alleviation of blockade restrictions, but what does it profit Central Europe that loads of condensed milk should be sent in while in the terms of the peace treaty milch kine must be delivered up? We are convinced that the medical profession will see farther than most into the future, will realise more clearly than the layman what is implied, and will support any movement of our Government towards organising effective measures of relief.

MERCURY IN MALARIA.

WE have received a pamphlet by Dr. Guido Cremonese, reprinted from *La Malariologia*, in which he discusses the use of certain mercurial preparations in the treatment of and the immunisation against malaria. (Di alcuni preparati mercuriali nella cura e nella immunizzazione della malaria, A. Tocco, Napoli.) The author claims that the problem of immunisation against malaria is near its solution. In a prior communication, Dr. Cremonese drew attention to the fact observed by him that syphilitics very frequently showed themselves refractory to malaria, though in a malarial zone and in the midst of actual sufferers. He was at first inclined to attribute this immunity to a biological antagonism between the two diseases. Further reflection led him to suspect that its cause was rather the saturation of the system with mercury, of which the syphilitics in question were the subjects. The matter was put to the test with results which, combined with successes obtained with salts of mercury in the treatment of malaria, led him to formulate the following statement and to ask his professional brethren to put the matter to extended trial: The salts of mercury are curative in malaria; they act cumulatively and remain in the organism for a considerable time; hence they are also immunisers. Detailed histories of 12 cases are given in support of the author's contention. They are cases of cure rather than immunisation in the strict sense, as all were malarial subjects. It is difficult, however, to deny the force of the author's contention that a method which will cut short the malarial process and prevent relapses must in all probability possess immunising powers. No cases in direct proof of this are brought forward in the present communication; firstly, because in the district in which the author works it is extremely difficult to find anyone entirely free from malaria on whom to carry out experiments bearing on the immunity-conferring powers of any drug; and secondly,

because sufficient time has not yet elapsed to justify his giving the results obtained in the few non-malarial individuals found whom he has been able to submit to experiment. He suggests that an experiment on a large scale could be made easily, quickly, and safely on soldiers ordered to a malarial district, it being, of course, a condition of the experiment that only soldiers hitherto absolutely untouched by malaria shall be the subjects of the experiment, and, further, that the desired saturation of the system with mercury shall be carried out in a healthy locality, under peace conditions, and with no risk of malarial infection during its progress. As bearing upon the question, Dr. Cremonese quotes the following cases that have come under his observation: 1. A military friend, returned from Albania, stated to him as a surprising fact that he had been in places where all his companions had been severely attacked by malaria and that he had remained immune. He did not mention a further fact—namely, that two years previously he had undergone a prolonged cure with mercury. 2. A lady who had had a mercurial course came to Fiumicino, the extremely malarial district in which Dr. Cremonese practises. She slept with a young sister. The latter was attacked by malaria, she herself remaining immune, though they were always together under identical conditions as regards infection. 3. A case of æstivo-autumnal fever in a man, non-syphilitic, who had never been treated by mercury, while his wife, living with him, who had two years before, probably owing to an error in diagnosis, been given a prolonged course of sublimate injections, remained free. The author administers mercury either by daily injections of 1 centigramme of sublimate or in pills containing a similar quantity of the biniodide. A coloured plate shows the blood changes in one of Dr. Cremonese's patients under mercurial treatment.

UNHOLY HOLIDAYS.

IN two or three months time the holiday season will have begun in earnest. Two or three of the sunniest and most refreshing months in the year will have been spent in the busy offices of great cities, and then with the close, often stifling, month of August will begin the scramble for the seaside. Panting and perspiring parents will struggle to squeeze their anxious families into the overcrowded trains. Eventually they may arrive at their destination, and at very considerable expense find some furnished quarters in which to recover from the journey. They will need all the strength they can accumulate to serve them in the scramble back to town. The railway companies, a large proportion of whose rolling-stock is still on the continent, will be heavily handicapped in dealing with this holiday traffic; indeed, they seem scarcely able to cope with normal requirements, and their executive has issued an appeal to business firms asking them to arrange such holiday programmes as shall ensure that a proportion of their staffs will travel in May and June. We should like to endorse this appeal and at the same time to inquire whether the companies for their part are doing all that is possible to expedite and facilitate travelling; whether, for example, it should be still necessary for passengers to wait half an hour in a queue to buy their tickets or to trundle their own luggage from the "taxi" to the guard's van. Labour cannot now be scarce, and if such discomforts are deliberately intended to discourage travelling we can only say that the methods chosen are too aggravating to be commendable. A holiday should be a time not of idleness but of restful change spent in the leisurely enjoyment of congenial society. This is its *raison d'être*, and on returning to work from such a holiday the holiday-maker should find himself better equipped for his duties, and, paradoxically enough, the test of a successful holiday is that at its close work appears more attractive than ever before. But the attraction to work should result from the general well-being of the subject, and not from an exasperated feeling that such are the horrors of travel that any official routine becomes pleasant in comparison. The public, be it remembered, do not all make holiday wisely. It is seldom necessary to travel far or to burden oneself with many impedimenta in order to obtain both rest and satisfaction. They are at least as likely to be found in June or September as in August and July, and the easy journey with one trunk is often well rewarded.

THE SPECIAL SUPPORTS OF THE UTERUS.

THE way in which the uterus is maintained in position is so far not settled, as all who have followed recent correspondence in our columns must see; but as a help towards arriving at unanimity of opinion we welcome the paper by Professor Francis Dixon, appearing in the *Dublin Journal of Medical Science* for April, entitled "The Special Supports of the Uterus." The title is interesting, for it suggests there are general supports and special supports, and this is admitted. The subject is here approached especially from the anatomical point of view, the paper opening with reference to the necessity of studying the uterus in the living subject, "and of exposing and cutting through the tissues related to the pelvic organs in the live state." We cordially agree that it is not possible to determine the meaning or functions of the various tissues within the pelvis by an examination of their structure, connexions, and relationships in the dead. Such knowledge must be supplemented by information gained by clinicians and surgeons, and by observation on animals, if we are to arrive at a satisfactory understanding of these complicated structures. The living processes which the tissues undergo should be considered first and always. The structures, all of which may contribute to the uterine support, in addition to the bony pelvis, are: (1) certain muscles; (2) layers or sheets of fascia and strands of connective tissue; and (3) the peritoneum. As to the pelvic diaphragm, formed by the levator ani, with which we would include the coccygei, Professor Dixon states there is almost complete agreement as to its importance, although there is some divergence of opinion as to the actual manner in which it acts. The layers of fascia investing these muscles he considers of little or no importance from this point of view. And as regards the peritoneum, he states it probably has but a small, if any, share in the support of the uterus. It is in the space between the pelvic diaphragm, lined by its fascia, and the peritoneum, in which the pelvic viscera are placed, that Professor Dixon finds tissues of notable importance, which he believes form the "special supports" of the uterus. These consist essentially of smooth muscle and connective tissue fibres with which the sub-peritoneal tissue at the sides of the cervix and vaginal fornices is packed. This dense sub-

peritoneal tissue "is continuous with the muscular wall of the cervix uteri and vaginal fornix, and not merely adherent to these structures, and in front of them it is continuous in the muscular wall of the lateral angle of the bladder and forms the 'ureteral sheath.' ..... When the muscle bundles are traced away from their attachments to the uterus and vagina they disperse in a radiating manner ..... towards the side wall of the pelvis." If these structures exercise a control over the position of the uterus in virtue of their contractility, waves of contraction, possibly arising in the uterus and passing on to the extra-uterine musculature, would cause these connexions to become more or less tense as occasion requires. On this theory the uterus may possibly shift its position to some extent by traction on or through the smooth muscle bundles which radiate from its cervix; and, further, the round ligaments, acting in the same sort of way, may draw the fundus forwards as the bladder empties. Professor Dixon, therefore, suggests that in the living subject the uterus has not the floppy condition found in the dead, but that it holds itself or is held in position by the action of the various bands of smooth muscle fibres which radiate from it, and that in this way the movements of the uterus are steadied. Such a conception is, of course, permissible if it be allowed that the uterus is already in a state of poise, maintained so by other forces; and we have no doubt that under such conditions the picture presented really represents reality. But the effect downwards on the collective pelvic viscera caused by the tonic contractions of the thoracic diaphragm and abdominal wall, and the counter-thrust upwards caused by the pelvic diaphragm, must be taken into account, as well as the effect of these special forces on the uterus. In short, the relation of the "special" to the "general" supports of the uterus has not been worked out. Everyone who is specially interested, either as morphologist or gynæcologist, should read Professor Dixon's contribution to a most interesting question, but we find it difficult to believe that problems surrounding prolapse and its treatment are to be solved by exclusive or even by greater attention to the special supports of the uterus. These have their effect in determining the position of the uterus; there is, however, every reason to believe that the position of the organ depends on an equilibrium in the maintenance of which other and greater forces participate. These also steady the uterus, and when they become deficient a floppy condition in the living, comparable with that in the dead, arises. Retroversion may result from this cause, as also the greater mobility of the uterus on examination under anæsthesia—this, at least, appears to be the best reply to questions which have not yet received complete answer.

LEAD IN THE CASSEROLE.

A PAPER by Helen Masters, B.Sc., which appears in the May number of *The Analyst*, sounds a warning note in regard to the use of the glazed casserole in culinary operations. Vessels of fireproofed potteryware have been extensively employed for cooking purposes during recent years, and are usually regarded as being more hygienic than metallic vessels. This might easily be a fallacy, judging from some of the results obtained by Miss Masters. It is, of course, well known that pottery glazes frequently contain lead, but the possibility of food cooked in such vessels becoming contaminated with lead appears to have been overlooked. We were under the impression that the glaze of the casserole was a lead-free porcelain glaze, and that if lead were used it was in the form of "fritt" tested to show that the lead in it was proof against the solvent action of weak acids. Miss Masters proves from experiments made with several types of casserole that in some cases a considerable amount of lead can be extracted from the glaze, not only by the action of 4 per cent. acetic acid, but also by the action of more dilute solutions of organic acids, notably 1 per cent. acetic acid, citric or malic acid, such as might occur in ordinary cooking processes. The lead extracted on boiling with 1 per cent. citric acid for 30 minutes amounted in several cases to from 2 to 4 mg. of lead monoxide per square dm. of the glaze. Moreover, the glaze continues to yield more lead even after 10 or 12 treatments, although in the last treatment the amount of lead extracted is less than in the first. These results were obtained with vessels made of pottery ware glazed only on the inside and stated to be of French make. It is observed that vessels of a similar kind, but of English make, are now being sold, and those so far examined yield considerably less lead than the French casseroles—viz., about 0·2 mg. per square dm. of the glaze. Casseroles made of "fireproof china," with a glazed surface both inside and out, did not yield lead under the same conditions of experiment. Vessels made of glazed earthenware, as, for example, pie-dishes, and pudding-basins in some cases, gave up a trace of lead. These findings, it seems to us, need careful consideration. Most authorities agree that lead-contaminated waters can only be regarded as reasonably safe if they contain less than 1/100 gr. per gallon (1 in 7 millions), so that a casserole yielding in cooking, through acid juices and vinegar, lead to the amounts above stated may give rise to serious disturbances of health.

CHILDREN'S TEETH.

THE Education Committee of the Devon County Council recently approached the Local Government Board with a view to enforcing dental treatment upon the children of parents who refuse such treatment for them. It has since been reported that the Local Government Board has sent a reply unfavourable to the proposition. Of the precise nature of the measures which the Devon education authority desired to take we are not aware, nor of the machinery of which it proposed to avail itself, and it may be that the Board disapproved of these without in any way wishing to discourage the zeal of the committee in question. The Local Government Board may also be of the opinion that an effort to enforce the care of children's teeth, confined to a particular locality and peculiar to it, might have as its result a purely local effort barren of results and liable to be condemned as inflicting a hardship upon a limited section of the population. There can be little doubt, however, that at some not very distant time, possibly under the authority of a strong and popularly supported Ministry of Health, the care of the children's teeth independently of the wishes or prejudices of their parents will be provided for as an intrinsic part of their education and upbringing. Popular support and a general, if not universal, recognition of its utility is necessary before legislation interfering

with parents in their family concerns can command success. It is also to be borne in mind that the prevention of caries—a vastly more important thing than its palliation—is a question of proper diet and cleanly habits, which can only be inculcated in children with the cordial coöperation of their parents. Compulsion here would be quite fruitless. With a Ministry of Health whatever is done for the good of children's teeth will, no doubt, have as its object the prevention of unsound teeth in future generations as the result of present investigation quite as much as the palliation of conditions already brought about. We expect to find more definite and more widely diffused knowledge of dental caries and its causes. The children of the present generation will be the fathers and mothers of the next, and we look forward to their support on the side of science. Some will have been helped by medical and dental science in their youth, others will have had help denied them owing to the attitude of their parents. Surely both sections of the community will know where their interests lie when science seeks to intervene on behalf of their offspring.

A FATAL CASE OF GENERALISED VACCINIA.

GENERALISED vaccinia does occur, but, at a time when small-pox is widely prevalent and protective inoculation officially recommended, it may be well to add that such an occurrence is very rare. All statisticians are agreed about it. According to Chauveau, only six to eight cases of the kind occurred in France among 500,000 to 600,000 vaccinated persons. In Denmark Haslund states that there were four cases among 39,915 vaccinations between 1888 and 1898, and in Germany Vogt saw only five examples among 100,000, and Groth only 50–60 among 2,285,579 vaccinations. Generalised vaccinia, as a rule, runs a mild course, but when there is a mixed infection with exudative dermatoses, especially eczema, prurigo, or impetigo, the disease tends to be much more severe. Only a few fatalities, however, have been recorded. Special interest therefore attaches to the following case reported by Anders.[1] The patient was a prisoner of war, aged 23, who was in an extremely ill-nourished condition, but did not present any skin lesions apart from a boil on the right shoulder, for which he reported sick on April 10th. Owing to the occurrence of a suspected case of small-pox he was vaccinated on the right upper arm on April 14th, and on the 18th was admitted to hospital with pneumonia. On the 21st four extraordinarily large vesicles were present at the vaccination site, with much inflammatory œdema surrounding them and swelling of the axillary glands. Vesicles were also present on the face, neck, chest, abdomen, and extensor surface of the extremities, especially the hands. During the next few days the temperature kept high, the general condition became worse, and death took place 11 days after the vaccination. The necropsy showed vaccinal pocks on the skin and mucous membranes of the mouth and trachea, as well as the ordinary lesions found in septicæmic conditions—viz., broncho-pneumonia, myocardial infarcts, fatty degeneration of the liver, bilateral orchitis, and cerebral and meningeal œdema. The diagnosis of vaccinia was confirmed by the fact that Anders himself developed a typical vaccine vesicle on the wrist several days after making the post-mortem examination.

[1] Ztschr. f. Hyg. u. Infektionskrankh., Leipz., 1919, lxxxviii., 116-127.

THE FUTURE OF ST. GEORGE'S HOSPITAL.

THE intention to sell the site on which St. George's Hospital stands and to build the institution elsewhere, which on several occasions before the war was publicly discussed, has been abandoned. It has been decided to build up-to-date out-patient and casualty departments and nurses' quarters on the site of the houses between the hospital and the Hyde Park Corner Tube Station as soon as building costs have returned to a reasonable level. The objections to moving the hospital are many, but are accounted for mainly by the difficulties of the disposal of the site and the building restrictions. The site, as is well known, is not entirely the property of the hospital, the southern portion belongs to the Duke of Westminster, who also has certain rights of pre-emption. A great advantage of the present site is its conspicuous position in the heart of the West-End, on one of the main arterial roads out of London, and it is absolutely needed there now that the Westminster Hospital is being removed, for there will soon be no hospital between Charing Cross and the West London Hospital, Hammersmith, a distance of five miles. The hospital stands on one of the finest open-air situations in the metropolis; it is most accessible, and it has the great advantage of a large convalescent home within easy reach, half an hour or less by motor. In these circumstances to remain in its old home is probably the wisest course which the charity can adopt, despite the enormous value of the site; and the generosity of the public, which has been conspicuous during a long history of legacies and subscriptions, may be relied upon in the future.

COLLOIDS IN MEDICINE AND IN INDUSTRY.

A COLLECTION of admirable monographs on colloid chemistry and its general and industrial applications has been published for the Department of Scientific and Industrial Research by His Majesty's Stationery Office. This report, which is the second of a series, is the outcome of the work, during the year 1918, undertaken by a committee acting under the Chemical Section of the British Association for the Advancement of Science. The first report was published in 1917, but the Association encountered financial difficulties consequent on the war, and found itself unable to meet the greatly enhanced cost of publication, and the question of publishing this second report of the work done in 1918 was referred to the Department of Scientific and Industrial Research. This department ultimately decided that the results of the work should be made accessible, on the grounds that they promised to be of considerable value to research workers in colloid chemistry and to many branches of chemical industry. It was therefore arranged that this second report should be published and issued at a price of 1*s.* 6*d.* net by H.M. Stationery Office on behalf of the Department of Scientific and Industrial Research. A wide field was covered, for the important subjects dealt with in the present report are as follows: Peptisation and precipitation, emulsions, the Liesegang phenomenon (formation of zones in jelly), electrical endosmose (including electro-therapeutics, the electro-osmotic infiltration of drugs), colloid chemistry in the textile

industries, colloids in agriculture, sewage purification, dairy chemistry, colloid chemistry in physiology, and the administration of colloids in disease. Our familiarity with the various properties of colloids shows considerable development since the time when Thomas Graham, in 1861, conceived the idea of the colloidal state of matter in his critical, though simple, experiments on the passage of fluids and gases through membranes and porous fabrics. Little importance at the time was attached to Graham's studies, and no one seemed to think it worth while to continue this line of research. Yet many years after it became obvious that the activities at work leading to the success of many great economic and industrial processes were based on colloidal conditions. Industry in its turn, as it has done before, opened up again suggestions of the highest value in medical researches, showing Graham to have been right in attaching importance to the part played by colloids in the principal life-processes. It was indeed a remarkable foresight which led him to write the following trenchant sentences in his communication to the Philosophical Transactions nearly 60 years ago: "The colloidal is, in fact, the dynamic state of matter, crystalloidal being the static condition. The colloid possesses *energia*. It may be looked upon as the probable primary source of the force appearing in the phenomena of vitality. To the gradual manner in which colloidal changes take place may the characteristic protraction of chemical organic changes be referred." This is tantamount to saying that all life-processes take place in a colloid system, only those structures being considered as living which are at all times in a colloidal state: that is a view which receives acceptance to-day by the advanced students of biochemical research. We recommend the possession as well as the perusal of these scientific and official reports on colloidal chemistry to our readers.

THE SILICOSIS SCHEME.

THE skeleton of the Workmen's Compensation (Silicosis) Act, 1918, has now been vivified by the publication of a detailed scheme of provisions, citable as "The Refractories Industries (Silicosis) Scheme, 1919." "Refractories industries" means the industrial manipulation of material containing not less than 80 per cent. of silica (SiO_2), and in practice is likely to apply chiefly to firebrick manufacture, to the quarrying and dressing of hard stone, and to certain processes in pottery. All workmen employed as above defined are to be examined once yearly and on certain additional occasions by a medical officer (often seemingly the local tuberculosis officer) appointed by the Secretary of State, with the exception that workers of over 20 years' standing shall be exempted unless they request otherwise in writing. Mines, works, &c., only occasionally used are likewise exempt, so that the scheme is not of such wide application as it looks at first. It might be possible to supplement it at some future time with similar legal enactments concerning other occupational pulmonary disease, say that found so extensively amongst glass-blowers. We note that the view that silicosis of itself can cause death is accepted. Failing a positive sputum test the differentiation of fatal silicosis from silico-tuberculosis must be difficult, save by a speedy post-mortem examination and animal inoculation. The various provisions for compensation seem fair, and there is evidence of a sympathetic consideration of the workman's lot. His examination within a month if dismissed is compulsory, while a good deal of latitude is prescribed as to inflicting penalties for his non-compliance with the provisions of the scheme. It is expected that working experience may modify some of the regulations. That the yearly period of examination is tentative is expressly stated.

OUT-OF-SCHOOL EMPLOYMENT.

PARLIAMENT recently insisted with no uncertain voice on the need of health supervision for the school child in other than school hours. Dr. T. Adam, chief school medical officer for Stirlingshire, has made an instructive inquiry in his own district into the employment of school children in out-of-school hours; this was completed towards the end of 1915, but publication of the inquiry has only now taken place as part of the proceedings of the Incorporated Sanitary Association of Scotland. The report contains the facts ascertained, carefully classified and tabulated, which may be briefly epitomised thus:—

In Stirlingshire 1800 school boys were being employed, as against 555 school girls; in all, 2355 children out of an average attendance of 27,635, or 8·5 per cent. The bulk of the children employed were at least 8 years old. With few exceptions the boys outnumbered the girls engaged at the various occupations. These exceptions were: (1) doctor's messenger; (2) going neighbours' messages; (3) doing housework; (4) baby nursing. The delivery of milk absorbed no fewer than 728 boys and girls—30·9 per cent., or almost a third of the whole 2355 children employed out of school hours. The total number of children engaged in the paper trade numbered 481, or 20·4 of the whole; of these, 317, or 13·5 per cent., were engaged in delivering papers, and 164, or 7·0 per cent., were engaged in selling papers. The milk and paper trade therefore accounted for the occupation of 1209 boys and girls, or 51·4 per cent. of the total number employed. Other occupations included: grocer's messenger, 193; baker's messenger, 108; going neighbours' messages, 144; food carrier, 210.

An attempt has been made to convey an idea as exact as possible of the actual number of hours both the boys and girls at the various age groups are occupied, both before and after school hours and on Saturdays and Sundays. The case of boys of 13 may be taken as an example, and of these 421 work each Saturday an average of 7·1 hours, and 131 boys work each Sunday an average of 3 hours. Those who work on Saturdays and Sundays are generally the same as work out of school hours during the rest of the week, so that many of the 259 boys of 13 years employed both before and after school hours are working on an average 30·6 hours per week. Many of the boys of 12 years work an average of 29 hours. A considerable number of girls of 13 years work an average of 22·5 hours a week, and girls of 12 an average of 21·4 hours. In one case a boy, aged 13 years, was engaged in the morning from 5 o'clock till 8.45, and in the evening from 4.30 to 9.30. Each Saturday and Sunday he began work at 5 A.M., and, whilst not engaged the whole of the time until 9.30, his work did not come to an end until then. The lad worked about 68 hours per week. He was engaged in helping his father, and, fortunately, his occupation was mostly in the open air. He was said to be of good physique and naturally smart, but appeared to suffer from drowsiness in school. Another boy worked 51 hours per week.

Dr. Adam goes on to estimate the physical and mental condition of the employed children, classifying each of the conditions as good, medium, and bad. With regard to the question of physical condition, he found that 58·2 per cent. could be classified as of good physical condition, 38·6 per cent. were of medium physical condition, whilst those of bad physical condition were represented by the comparatively small percentage of 3·2. Comparing these figures with those showing the average percentages for the children of the whole county he found that the children of the latter coming under the category of "good" amounted

to 41·6 per cent., as compared to 58·2 per cent. in the case of the employed children, whilst those whose condition would be classed as "bad" formed 10·9 per cent. of the whole, as against 3·2 per cent. of the employed children. With regard to the mental condition, the figures for the school children of the whole county were not so favourable as those for the employed children. These facts seemed to him to point out that business people employing such children endeavoured to select those most physically sound and mentally alert, that the employed children were a selected class, and that, as a rule, these children, by having their energies during the best hours of the day diverted into channels other than their school duties, were more or less handicapped in the school race. In order to be able to judge of the home conditions an inquiry was made into the housing standard. It was found that of the total of 2355 employed 94 lived in houses of one apartment, 1225 lived in houses of two apartments, 601 in houses of three apartments, 227 in houses of four apartments, and 208 in houses of more than four apartments. It might be said that the higher the social well-being of the family the less need there would be for the employment of the school children as wage-earners. On the other hand, the better class of home might be rendered possible by the children's added earnings. Dr. Adam feels strongly that many of these children are irretrievably hindered in after-life. There is no time or inclination for natural play, the buoyancy of the child is apt to disappear, and he is deprived of his childhood and rendered old beyond his years. "It will be found that in a large proportion of cases the child's initial capital or nature's endowment is used up in such channels as yield an early material return, but the investment cannot in the end be regarded as good or profitable." Dr. Adam concludes his valuable study with suggestions for remedying an admitted ill.

THE Croonian Lecture will be delivered before the Royal Society by Dr. H. H. Dale, F.R.S., on Thursday, May 29th, the subject being "The Biological Significance of Anaphylaxis."

Sir Joseph J. Thomson, O.M., President of the Royal Society and Master of Trinity College, Cambridge, has been appointed a member of the Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research.

THE President of the Local Government Board has appointed Sir Shirley F. Murphy, Lieutenant-Colonel, R.A.M.C. (T.), some-time medical officer of health, Administrative County of London, at present attached to the London Command, to represent His Majesty's Government at the forthcoming congresses of the Ontario Medical Association and the American Medical Association to be held at Toronto and Atlantic City respectively.

Dr. Beattie Crozier, the author of "Intellectual Development" and other well-known books of a philosophical character, celebrated his seventieth birthday on April 23rd, when he received a letter of congratulation signed by a number of eminent men, politicians, sociologists, and physicians, among whom may be mentioned Lord Morley, Lord Bryce, Sir William Osler, and Mr. J. A. Hobson. The letter expressed warm appreciation of Dr. Crozier's services to British scholarship and endeavours for human welfare.

DESTRUCTION OF MOSQUITO LARVÆ IN STREAMS:

A THOROUGH AND ECONOMIC METHOD.

BY ARNOLD K. HENRY, M.B. DUB., F.R.C.S. IREL.,
LATE CONSULTING SURGEON TO 5TH SECTOR, 17TH REGION, ARMÉE FRANÇAISE.

THE problem of destroying mosquitoes is as various as landscape, and these suggestions for killing larvæ, based on work done with the R.A.M.C. in 1916 on an Indian cantonment lying between two parallel and prolific streams, are advanced less for direct guidance than for information, and, *mutatis mutandis*, for necessary action. For I am well aware that even an expert in one district may be a tyro in the next.

In the first place, the discovery of larvæ is not always achieved at a glance. Small anophelines are often very difficult to distinguish in sunlight on clear water cupped in a hoof-print or along the edges of a stream, especially over grey sand. If, however, the water be clouded by disturbing its edge they are easily detected against the muddy background. It is, in my experience, impossible to be certain of the absence of young larvæ from pools or streams until their edges have been systematically disturbed and their waters clouded.

When the larvæ have been discovered the problem of destroying them and its solution depend upon two propositions. First, mosquitoes prefer to breed in still water; secondly, their larvæ are destroyed by kerosene. The first thing, then, is to reduce to a minimum the slack water of a stream; the second, to make each part of its surface accessible to the oil; and a third, to use as little kerosene as possible.

Reduction of Slack Water of a Stream.

The stream must first be narrowed wherever it spreads into slack water. The factors tending to this condition of stasis are readily imagined. A large stone, an outcrop, or a mudbank may be acting as a dam, and a little work at the distal end may drain a large basin. The task of narrowing should therefore be carried out *up*-stream; this can be most rapidly done by digging out the stream-bed and using the material removed to fill in the pools which the receding water leaves upon the banks. The stream is thus drained into a channel cut through its own bed.

When the hardness of the bottom makes canalisation difficult it may be necessary to narrow the stream by dumping earth and stones on either side; but if labour is scarce this tedious procedure may be postponed and an alternative used which I shall afterwards describe; for in mosquito-land there is a pigeon-hole for every requisition and one must be content with little.

It is essential in canalisation to remove any vegetation growing out of or dipping into the stream. The smallest clump may afford food and shelter to mosquito larvæ. Mere canalisation, however, by no means solves the problem of abolishing slack water, for if the bank of the narrowed and swifter stream be examined, it will be seen to be a microcosm of bays, creeks, and inlets offering vast and tranquil harbourage to small organisms. The larvæ, too, are powerful swimmers and can extricate themselves from what seem for them mighty currents, and they can easily maintain their position in the often almost stationary ribbon of water which borders even the smoothest bank.

Other things being equal, the smoother and less denticulate the edge of the bank, the less slack water there will be. Thus it is unwise to edge a bank with bare stones, for the water tends to form lagoons behind them and to stagnate in the spaces between. In the streams I worked in I found that mud was the best of makeshift materials for securing a smooth edge.

Method of Segmental Oiling.

The second practical point in larval destruction may be considered with the third. Each part of the water surface must be made accessible to the kerosene film, and the kerosene must be economised. If oil be merely poured or sprayed on a segment of stream surface, even if it form a film extending from side to side in that segment, it will, if allowed to pass on to the next, tend to remain in the axial current and to spread incompletely from one bank to the

other, and so it will very likely glide harmlessly past lilliputian roadsteads with their larval flotillas. Again, if long reaches of the stream are sprayed large quantities of the oil will be required.

For these reasons I adopted the following thrifty and effective method. Planks are chosen of lengths corresponding roughly to the widths of the stream. A plank, A, is put across the stream and is fixed with stones and mud at either end, so that one of its edges dips vertically 2 or 3 inches into the water so as to form a kind of surface dam. 15 or 20 yards lower down another plank, B, is similarly placed. A quarter to half a pint of kerosene is then poured on to the proximal part of the segment of stream between A and B, and with a sweeping-brush is distributed over the surface to either bank. With the brush, the film of oil is swept along the edges, and made to penetrate every slightest indentation and to entangle every larva in the sluggish border of the stream. When the entire surface of the segment has been subject to the kerosene, a third plank, C, is placed in position another 20 yards down-stream below the distal plank, B, which is now lifted. The surface-film of oil with its freight of dead and dying larvæ, which this plank has been damming back, is allowed to pass to the next segment of the stream, where it is again brought into intimate contact with the edges of the bank by vigorous sweeping. Thus the same oil is used successively for many segments of the stream.

Not all the oil is kept back by the surface dam; some passes underneath the plank and is carried away, but the greater part is kept back. Leakage must be made good from time to time by additions of kerosene, but it can be reduced to a minimum by placing the planks where the velocity of the current is low, and if this be done a proximal plank may often be dispensed with. I have noticed, too, that bits of grass or stems which become included in the kerosene film give to it a kind of increased cohesion, and these, where the water is ideally free from vegetable growth or detritus, may with advantage be introduced into the film.

Thrift and Efficiency of the Method.

In its progress the oil entangles and keeps enmeshed an amazing variety of insect life, including even powerful water-beetles of half an inch in length, which, once caught, cannot escape from the film and are slowly killed by it, and where the oil has passed, if the sweeping has been thorough, it leaves a watery desert.

Used in connexion with canalisation this method of segmental oiling gives the best results, but it is very useful as a preliminary measure to the long business of cutting the channel, for during all this time larvæ will be completing their development. It was thus that I first used it, in a stream full of weeds, with banks grown with dipping herbage. Even under these very unfavourable conditions, which I had not then the labour to remedy, I succeeded in ridding the parts so treated of almost all their larvæ. For instance, in a very prolific and weedy segment of slack unchannelled stream, over 100 yards in length, only three larvæ were discovered next day by another observer. If the stream had been channelled this would have been discreditable, but under the circumstances it was not discouraging. In my area I had frequently to oil unchannelled stream, for in one nullah the shallow water sometimes rose six feet after a single night's rain, erasing the channelling and occasionally drowning a native.

As the two streams were practically equidistant from a line bisecting the rectangular cantonment, I naturally began by treating that from which the prevailing wind was blowing.

With regard to the quantity of kerosene required, an actual example will show the great economy secured by my method of segmental oiling. 3500 linear feet of stream, only 500 feet of which were at that time cleared or canalised, were effectively oiled with 16 pints of kerosene. Thus, one pint oiled a length of 218 feet. The average width of the stream was 6 feet: so that one pint oiled over 1300 square feet. In a recent publication it is stated that one pint is required for 200 square feet of stream surface—i.e., a quantity six and a half times greater than that used for effective segmental oiling under bad conditions. In a properly cleaned and canalised stream the economy of kerosene is even greater, and half a mile of channelled water can be oiled and swept in a morning's work by three men.

The continuous method of oiling streams by a stationary can, from which the kerosene drips, fails in thoroughness; for the oil, tending often to remain in the axial current, is not brought into the intimate contact with the edge, secured by the sweeping brush, which is essential for thorough success. Then, too, it neglects the social aspect of the stream, and one of my streams which bordered a bazaar had for the native a very distinct social aspect. It was at once his bath and his laundry, his latrine and his drinking-place. His ox, too, used it in much the same way, and continuous kerosene would have been strangely unpopular in a nullah where soap and excrement passed without comment. A drip-tin would have been resented and quite as certainly stolen.

System of Working.

In connexion with segmental oiling, I had the streams divided into lengths of 100 paces by painting numbers on convenient pieces of rock or on little sign-boards marked from zero upwards. This made it easy to record work projected or accomplished. Infested localities were, for uniformity, indicated as so many paces *distal* to a given mark along the right or left bank. Tributary streamlets and their vasa vasorum can be named or lettered, divided into suitable lengths, and numbered from zero marks placed at their points of entry into the receiving channels.

This system permitted topographical data to be collected regarding the incidence of particular larvæ at any season, and the presence of the enemy could be marked with little flags on a map of the area. A careful record should be kept of the directions of the wind prevailing at different seasons of the year.

The personnel should be made in turn responsible for successive lengths of stream, so that in time each man may become thoroughly acquainted with the entire area. It is usually sufficient to oil each segment once a week, but the work of keeping in repair the banks of a stream canalised by the makeshift methods generally available is as endless as the painting of the Forth Bridge.

Apart from streams, large water surfaces—where the larvæ, in my experience, when central weed is absent, are confined to the edges—may be treated very economically by driving kerosene along these edges with a brush. Most of the oil can be prevented from escaping to the centre by means of a long board, attached to a handle, which dips into the water and confines it in a kind of temporary channel between the board and the bank. The larvæ are disturbed and entangled, and the same oil is used repeatedly for successive portions of the edge.

In conclusion, I wish to thank Sergeants Corry and Ryan for their keen and efficient coöperation in the work.

Dublin.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Health Bill.

IN the House of Lords on May 13th, when the Health Bill was in Committee, the Marquess of Aberdeen and others tried to get the six representatives on the Irish council "having practical experience of matters relating or incidental to, or affecting the health of, the people" increased to ten, of whom half should be women. The Government refused on the ground that the Irish clause was settled in its final form after consultation with Irish Members of all sections and representatives of public health bodies. The medical profession in Ireland are gradually getting more information about the famous Clause 10 of the Health Bill. The allegation of the Chief Secretary for Ireland was that the clause was a compromise arranged by and with all the Irish Members at present attending Parliament, and seemed rather astonished when he was told that the Irish Members, including the medical representatives, had never consulted the profession as a whole on the matter. Now, in the House of Lords, it is said "representatives of public health bodies" were consulted, but, wisely, no names are given, and the medical profession again know nothing. The whole way the matter was arranged by the politicians (medical and others) has utterly disgusted the medical profession in Ireland, and has done an immense deal to advance trades-union ideas and to demonstrate that the doctors of Ireland will have to say, in a thoroughly united

way—as the Royal Faculty of Physicians and Surgeons of Glasgow have done[1]—"that no adequate opportunity has been given to the medical profession, which ought to be the paramount authority in matters concerning health, for the discussion of the Scottish (substitute 'Irish') Board of Health Bill. The Faculty is of opinion that the medical profession is not sufficiently represented on the proposed Board. The Faculty considers that, as the health of the community is to be under the supervision of the Board of Health, the said Board should include general medical practitioners of wide experience, and the Faculty regards any Board formed without such members as quite unsuitable for obtaining the objects which the Bill contemplates." The medical profession—having lost all faith in the politicians—must, at the coming meeting in Dublin, say with a united voice, that unless the fair demands of those who are to work a Health Bill in Ireland and to make it a success are met—and democratic not bureaucratic principles must rule—they will respectfully decline to have anything to do with such a measure. Imagine lawyers or the Labour Party being treated in such a contemptuous way!

Rainfall in the North of Ireland.

During the month of April, in Belfast, rain fell on 24 days to the total amount of 1·69 inches, which is below the average for the previous 44 years, which was 2·58 inches. The total rainfall for the first four months of this year is 12·15 which is a little above the amount for the same time in 1918.

May 20th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Prescribing of Cocaine.

AN Edinburgh doctor was recently fined £1 at the Edinburgh Sheriff Court for giving a patient a prescription for cocaine on which the words "not to be repeated" did not appear. The druggist who made up the prescription was likewise fined. There was no suggestion of any other offence except forgetfulness, and the prescription was one for a throat gargle, in which carbolic acid also appeared, and which was therefore quite impossible for any other purpose. The imposition of a fine was therefore a measure of some severity, as no danger whatever of misuse was thereby brought about, but authority is right in insisting that the law should be absolutely obeyed when dealing with dangerous drugs.

Professional Chemists and the Scottish Board of Health.

A deputation of the Association of Public Analysts for Scotland and the Scottish local section of the Institute of Chemistry has been received by the Secretary for Scotland, and has laid its views before him. The necessity was emphasised of having a professional chemist representative on the Scottish Board of Health, to advise on the administration of the Acts relating to food and drugs, to river pollution, to the Alkali and Factory Acts, and to the supplies of milk and water.

Affairs of Edinburgh University.

A chair of psychiatry and one of zoology are now in process of establishment. It has been arranged that the former should be occupied by the physician-superintendent to the Royal Edinburgh Asylum for the Insane, and the latter is a development in the department of natural history, that subject now being divided into two professorships.—The university will shortly become the owner of an additional piece of land, amounting to about 115 acres, between Mayfield-road and the Craigmillar golf course. It will probably first be utilised for the site of a new chemical laboratory.—The number of students matriculating during the current year is greater than in any time for many years. Many would-be students in medicine have had to be turned away. But refusal has only been exercised in the cases of boys from school who could well afford to wait, and ex-service men have, without exception, been admitted.

Dr. J. D. Comrie, Edinburgh, has been appointed consulting physician to the Forces in North Russia, and has left to take up his work.

May 20th.

[1] THE LANCET, May 17th, p. 863.

THE PORTRAIT OF SIR CLIFFORD ALLBUTT.

As announced in our issue of May 10th, Sir Clifford Allbutt has accepted the presentation from the medical profession of his portrait, to be painted by a well-known artist. The Council of the British Medical Association has taken the initiative in the matter, Sir Clifford Allbutt having been President of the Association during the years of the war, and intending to preside over the annual meeting in Cambridge next year. The esteem due to Sir Clifford Allbutt's attainments and the warm affection inspired by his character are such that very many will desire to share in this tribute to one whose career has reflected so much honour on medicine in England. This desire will not be limited to his many pupils, first in Leeds and afterwards in Cambridge, nor to the members of the British Medical Association, and subscriptions are invited from all the medical profession. The amount is limited to one guinea, and the Treasurer of the British Medical Association, 429, Strand, London, W.C. 2, is now prepared to receive subscriptions of one guinea or less.

Among the first subscribers are:—

The Right Hon. C. Addison, M.P., President of the Local Government Board.
Sir Norman Moore, President of the Royal College of Physicians, London.
Sir G. H. Makins, President of the Royal College of Surgeons, England.
Surgeon Vice-Admiral Sir W. H. Norman, Director-General, R.N.
Lieutenant-General Sir John Goodwin, Director-General, A.M.S.
Major-General M. H. G. Fell, Director of Medical Services, Air Ministry.
Major-General Sir R. Havelock Charles, Medical Adviser to the Secretary of State for India.
Colonel A. L. A. Webb, Director-General, Medical Department, Ministry of Pensions.
Sir William Osler, Regius Professor of Medicine, University of Oxford.
Lieutenant-General Sir Alfred Keogh, Rector of the Imperial College of Science
Sir Humphry D. Rolleston, President of the Royal Society of Medicine.
Dr. P. C. Abercrombie, Colonel J. G. Adami, Dr. John Adams, Major-General G. Bainbridge, Mr. D. B. Balding, Captain H. A. Ballance, Sir Thomas Barlow, Dr. Henry Barnes, Dr. J. A. Barnes, Sir James Barr, Dr. A. G. Barrs, Lieutenant-Colonel T. D. Barry, R.A.F., Dr. W. Blair Bell, Dr. Comyns Berkeley, Dr. M. G. Biggs, Dr. R. Bolam, Dr. W. A. Bond, Dr. E. Dykes Bower, Dr. H. M. Brackenbury, Professor J. B. Bradbury, Sir John Rose Bradford, Dr. F. A. L'Estrange Burges, Dr. A. Burton, Dr. C. Buttar, Dr. H. J. Campbell, Dr. C. H. Cattle, Sir Francis Champneys, Sir W. Watson Cheyne, Dr. Francis Clark, Dr. Louis Cobbett, Dr. Sidney W. Cole, Dr. W. Collier, Sir E. M. Cooke, Mr. Russell Coombe, Mr. E. M. Corner, Dr. R. M. Courtauld, Dr. Douglas Cow, Dr. Alfred Cox, Sir Anderson Critchett, Dr. J. Darling, Major-General Sir Bertrand Dawson, Dr. H. P. S. Devitt, Dr. W. J. Dewar, Dr. W. E. Dixon, Dr. Stanley Dodd, Dr. E. J. Domville, Dr. J. R. Drever, Dr. Ernest Dore, Mr. W. McAdam Eccles, Mr. W. H. Elam, Lieutenant-Colonel R. H. Elliot, Colonel T. R. Elliott, Mr. Luming Evans, Dr. A. C. Farquharson, M.P., Mr. E. Hurry Fenwick, Sir David Ferrier, Major E. Rowland Fothergill, Dr. A. Fulton, Sir James Galloway, Dr. T. W. H. Garstang, Dr. John Goff, Captain W. N. Goldschmidt, Dr. E. W. Goodall, Sir Alfred Pearce Gould, Dr. W. J. Greer, Dr. W. S. Griffith, Dr. Donald G. Hall, Dr. W. Hall, Mr. N. Bishop Harman, Dr. G. E. Haslip, Dr. Arthur Hawkyard, Dr. C. O. Hawthorne, Dr. G. S. Haynes, Dr. Henry Head, Mr. C. J. Heath, Sir Wilmot P. Herringham, Dr. G. W. Hill, Dr. W. Ainslie Hollis, Professor F. G. Hopkins, Dr. N. G. Horner, Dr. C. H. Hough, Dr. James Hudson, Dr. L. Humphry, Dr. J. B. Hurry, Dr. Robert Hutchison, Dr. T. B. Hyslop, Dr. O. Inchley, Dr. J. W. Johnson, Major-General Sir Robert Jones, Professor Arthur Keith, Mr. Frank Kidd, Dr. Percy Kidd, Captain Arthur King, Dr. C. Lamplough, Sir W. Arbuthnot Lane, Dr. R. Langdon-Down, Dr. H. A. Latimer, Dr. Norman Lock, Surgeon-Commander F. D. Lumley, "H. C. M.," Dr. N. J. McCaskie, Dr. J. A. Macdonald, Dr. H. C. Mactier, Dr. J. Mason, Professor Rutherford Morison, Sir Malcolm Morris, Dr. Reginald Morton, Major-General Sir Berkeley Moynihan, Professor G. R. Murray, Lieutenant-Colonel B. Myers, Dr. W. Gifford Nash, Dr. E. N. Nason, Dr. James Neal, Professor G. H. F. Nuttall, Sir Thomas Oliver, Mr. T. H. Openshaw, Mr. Herbert W. Page, Dr. George Parker, Dr. Norman Porritt, Dr. Edwin Rayner, Sir Hugh Rigby, Dr. G. F. Rogers, Sir Ronald Ross, Dr. Mary Scharlieb, Sir Felix Semon, Dr. Laurison Shaw, Dr. Ernest Sheahan, Dr. A. G. Shera, Mr. James Sherren, Dr. Charles Singer, Dr. Graham Smith, Dr. W. Johnson Smyth, Dr. E. Somers, Dr. J. L. Speirs, Dr. S. Squire Sprigge, Dr. George Steell, Dr. John Stevens, Dr. M. J. Stewart, Colonel Sir Harold Stiles, Dr. T. S. P. Strangeways, Dr. W. S. Syme, Lieutenant-Colonel E. M. Sympson, Mr. T. Pridgin Teale, Colonel Sir J. Lynn Thomas, Lieutenant-Colonel D. G. Thomson, Lieutenant-Colonel E. N. Thornton, Dr. Herbert Tilley, Dr. W. B. Crawford Treasure, Mr. E. B. Turner, Sir T. Jenner Verrall, Mr. Harold Walker, Dr. Norman Walker, Dr. Samuel Walker, Major-General Cuthbert Wallace, Mr. W. E. Warne, Dr. Dawson Williams, Dr. Claude Wilson, Professor Sims Woodhead, Dr. Aldren Wright, Mr. C. S. Young.

DONATIONS AND BEQUESTS.—Lord Cowdray has sent a cheque for £4000 to the South London Hospital for Women, Clapham Common, for the purpose of endowing in perpetuity two single bed wards, one to be named the Cowdray Ward and the other the Paddock Hurst Ward.

URBAN VITAL STATISTICS.

(Week ended May 17th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 13·5, 13·7, and 12·6 in the three preceding weeks, declined to 12·0 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 11·3, or 1·2 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 5·1 in Edmonton, 5·2 in Walthamstow, and 5·3 in York, to 19·2 in Derby, 20·1 in Stockton-on-Tees, and 24·2 in Middlesbrough. The principal epidemic diseases caused 162 deaths, which corresponded to an annual rate of 0·5 per 1000, and included 55 from measles, 38 from infantile diarrhœa, 32 from diphtheria, 23 from whooping-cough, 9 from scarlet fever, 4 from enteric fever, and 1 from small-pox. Measles caused a death-rate of 2·4 in Rotherham and 5·2 in Middlesbrough. The fatal case of small-pox was registered in Southampton. There were 3 cases of small-pox, 1078 of scarlet fever, and 1137 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 2, 1065, and 1129 respectively at the end of the previous week. The causes of 23 deaths in the 96 towns were uncertified, and included 4 each in Birmingham and Liverpool, and 2 each in London, Bolton, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 12·8 and 13·7 in the two preceding weeks, slightly fell to 13·5 per 1000. The 309 deaths in Glasgow corresponded to an annual rate of 14·4 per 1000, and included 16 from measles, 15 from whooping-cough, 4 each from diphtheria and infantile diarrhœa, and 1 each from enteric fever and typhus. The 111 deaths in Edinburgh were equal to a rate of 17·2 per 1000, and included 11 from whooping-cough, 4 from measles, 2 from diphtheria, and 1 from scarlet fever.

Irish Towns.—The 139 deaths in Dublin corresponded to an annual rate of 17·9, or 0·6 per 1000 above that recorded in the previous week, and included 4 from infantile diarrhœa and 1 each from measles and diphtheria. The 116 deaths in Belfast were equal to a rate of 15·1 per 1000, and included a fatal case of infantile diarrhœa.

VITAL STATISTICS OF LONDON DURING APRIL, 1919.

In the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 4·6 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4·5, 4·1, and 4·5 per 1000. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in Kensington, Chelsea, the City of Westminster, Hampstead, Holborn, and the City of London; and the highest in Hackney, Stepney, Southwark, Deptford, Greenwich, and Lewisham. Two cases of small-pox were notified during the month, against 7, 0, and 7 in the three preceding months; of these cases, 1 belonged to Islington and 1 to the Port of London. The prevalence of scarlet fever was slightly more than in the preceding month; this disease was proportionally most prevalent in St. Pancras, Southwark, Bermondsey, Lambeth, Deptford, and Lewisham. The Metropolitan Asylums Hospitals contained 1043 scarlet fever patients at the end of the month, against 1043, 1075, and 1009 at the end of the three preceding months; the weekly admissions averaged 138, against 128, 139, and 126 in the three preceding months. The prevalence of diphtheria was slightly less than in the preceding month; the greatest prevalence of this disease was recorded in Hackney, Stepney, Southwark, Deptford, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1170, 1163, and 1152 at the end of the three preceding months, numbered 1134 at the end of April; the weekly admissions averaged 151, against 164, 153, and 164 in the three preceding months. Eighteen cases of enteric fever were notified during the month, against 13 in each of the two preceding months; of these, 5 belonged to Stepney, 2 to Kensington, and 2 to Deptford. There were 16 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 23, 18, and 16 at the end of the three preceding months; the weekly admissions averaged 2, against 3, 2, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in St. Pancras, Holborn, Finsbury, Shoreditch, Southwark, Bermondsey, and Deptford. The 17 cases of puerperal fever notified during the month included 3 in Kensington, 3 in Wandsworth, 2 in Paddington, 2 in Stepney, and 2 in Lambeth. Of the 38 cases of cerebro-spinal meningitis 4 belonged to St. Pancras, 4 to Islington, 4 to Wandsworth, and 3 to Hammersmith; while the 5 cases of poliomyelitis belonged respectively to Hammersmith, Southwark, Wandsworth, Lewisham, and Woolwich.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the five weeks ended May 3rd the deaths of 5779 London residents were registered, equal to an annual rate of 15·0 per 1000; in the three preceding months the rates had been 15·6, 28·5, and 20·9 per 1000. The death-rates ranged from 12·7 in Lewisham, 12·8 in Fulham, 12·8 in Hampstead, 12·8 in Wandsworth, 12·9 in the City of London, 13·1 in Woolwich, and 13·2 in Hammersmith, to 16·9 in Paddington, 16·9 in Poplar, 17·2 in St. Marylebone, 17·3 in the City of Westminster, 18·2 in Kensington, and 18·3 in Shoreditch. The 5779 deaths from all causes included 185 which were referred to the principal infectious diseases; of these, 1 resulted from small-pox, 37 from measles, 12 from scarlet fever, 64 from diphtheria, 16 from whooping-cough, 6 from enteric fever, and 49 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in Holborn and in Finsbury. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Chelsea, Islington, Southwark, Bermondsey, and Deptford. The death from small-pox belonged to Islington. The 37 deaths from measles were 274 below the average number in the corresponding period of the five preceding years; this disease was

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING APRIL, 1919.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.
LONDON	**4,026,901**	**2**	**711**	**767**	**—**	**18**	**—**	**17**	**203**	**38**	**5**	**1761**	**4·6**	**1**	**37**	**12**	**64**	**16**	**6**	**49**	**185**	**0·5**	**5779**	**15·0**
West Districts :																								
Paddington	122,507	—	24	16	—	1	—	2	4	2	—	49	4·2	—	3	1	—	—	—	2	6	0·5	199	16·9
Kensington	151,535	—	13	15	—	2	—	3	3	1	—	37	2·5	—	1	1	2	1	—	2	7	0·5	264	18·2
Hammersmith ...	114,952	—	16	18	—	—	—	—	8	3	1	46	4·2	—	—	—	2	1	—	3	6	0·5	145	13·2
Fulham	145,186	—	22	24	—	1	—	1	5	2	—	55	4·0	—	—	1	4	—	—	1	6	0·4	178	12·8
Chelsea	57,368	—	2	6	—	—	—	1	3	—	—	12	2·2	—	1	—	—	—	—	—	1	0·2	85	15·5
City of Westminster	122,046	—	11	8	—	1	—	—	4	—	—	24	2·1	—	2	1	1	—	1	1	6	0·5	202	17·3
North Districts :																								
St. Marylebone ...	92,796	—	12	20	—	1	—	1	5	2	—	41	4·6	—	7	—	1	—	—	2	10	1·1	153	17·2
Hampstead	75,649	—	9	2	—	—	—	—	3	—	—	14	1·9	—	—	—	—	—	—	2	2	0·3	93	12·8
St. Pancras	186,600	—	41	22	—	1	—	—	15	4	—	83	4·6	—	—	—	3	—	1	3	7	0·4	264	14·2
Islington	297,102	1	34	46	—	1	—	—	15	4	—	101	3·5	1	1	1	—	1	1	2	7	0·2	428	15·0
Stoke Newington...	47,426	—	8	7	—	—	—	1	—	—	—	16	3·5	—	1	—	—	—	—	1	2	0·4	70	15·4
Hackney	196,598	—	42	68	—	—	—	—	4	—	—	114	6·0	—	1	—	6	5	—	7	19	1·0	294	15·6
Central Districts :																								
Holborn	35,303	—	—	1	—	—	—	—	5	1	—	7	2·1	—	—	—	—	—	—	—	—	—	55	16·2
Finsbury	68,011	—	10	11	—	—	—	1	5	1	—	28	4·3	—	—	—	—	—	—	—	—	—	102	15·6
City of London ...	16,138	—	1	—	—	—	—	—	—	—	—	1	0·6	—	—	—	—	1	—	—	1	0·6	20	12·9
East Districts :																								
Shoreditch	89,675	—	19	15	—	1	—	—	7	—	—	42	4·9	—	1	1	2	—	1	1	6	0·7	157	18·3
Bethnal Green ...	107,362	—	19	21	—	—	—	—	6	1	—	47	4·6	—	3	1	4	—	—	3	11	1·1	150	14·6
Stepney	232,010	—	46	79	—	5	—	2	13	1	—	146	6·6	—	2	—	3	1	1	6	13	0·6	362	15·8
Poplar	143,443	—	14	24	—	1	—	—	4	2	—	45	3·3	—	—	—	5	1	—	1	7	0·5	233	16·9
South Districts :																								
Southwark	167,936	—	38	51	—	—	—	—	14	—	1	104	6·5	—	—	—	1	—	—	—	1	0·1	226	14·0
Bermondsey	107,635	—	27	18	—	—	—	—	8	1	—	54	5·2	—	1	—	1	—	—	2	3	0·2	163	15·8
Lambeth	272,038	—	71	40	—	1	—	2	18	2	—	134	5·1	—	1	3	5	—	—	2	11	0·4	395	15·1
Battersea	150,023	—	33	25	—	—	—	—	7	1	—	66	4·6	—	4	—	3	—	—	—	7	0·5	208	14·5
Wandsworth	300,787	—	51	41	—	—	—	3	11	4	1	111	3·8	—	7	1	5	3	—	2	18	0·6	369	12·8
Camberwell	239,461	—	34	49	—	—	—	—	12	2	—	97	4·2	—	—	1	6	—	1	2	10	0·4	343	14·9
Deptford	103,527	—	37	32	—	2	—	—	8	—	—	79	8·0	—	—	—	2	—	—	—	2	0·2	147	14·8
Greenwich	90,440	—	14	47	—	—	—	—	4	1	—	66	7·6	—	1	—	4	1	—	—	6	0·7	131	15·1
Lewisham	161,405	—	43	36	—	—	—	—	6	2	1	88	5·7	—	—	—	2	1	—	3	6	0·4	197	12·7
Woolwich...	131,942	—	20	25	—	—	—	—	6	1	1	53	4·2	—	—	—	2	—	—	3	5	0·4	166	13·1
Port of London ...	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

proportionally most fatal in Paddington, St. Marylebone, Bethnal Green, Battersea, and Wandsworth. The 12 fatal cases of scarlet fever were 10 less than the average number, and included 3 in Lambeth. The 64 deaths from diphtheria were 5 above the average; the greatest proportional mortality from this disease was recorded in Fulham, Hackney, Bethnal Green, Poplar, Camberwell, and Greenwich. The 16 fatal cases of whooping-cough were one-twelfth of the average number; of these 5 belonged to Hackney. Six deaths from enteric fever were recorded during the month, against an average of 9. The 49 deaths from diarrhœa and enteritis among children under 2 years of age were 28 below the average; the greatest proportional fatality from this disease occurred in Hammersmith, Hampstead, Hackney, Bethnal Green, and Stepney. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during April was 72·5 per cent. below the average.

The War and After.

MENTIONED IN DESPATCHES.

THE following additional names of medical officers brought to notice for distinguished and gallant service and devotion to duty in the spheres of operations detailed are announced:—

In France.—Lieutenant-General Sir A. T. Sloggett, K.C.B., K.C.M.G., K.C.V.O.

In Egypt.—Captain J. H. Beilby, R.A.M.C.

In Mesopotamia.—Lt.-Col. (temp. Col.) J. H. R. Bond, D.S.O., R.A.M.C., Major J. H. Brunskill, D.S.O., R.A.M.C., Temp. Capt. W. A. Cardwell, R.A.M.C., Major (acting Lt.-Col.) G. E. Cathcart, R.A.M.C., Capt. R. A. Chambers, M.B., I.M.S., Temp. Capt. G. H. Davy, R.A.M.C., Capt. J. R. Harris, R.A.M.C. (S.R.), Major H. L. Howell, M.C., R.A.M.C., Temp. Major M. B. Scott, R.A.M.C., Capt. F. T. H. Wood, R.A.M.C. (T.F.).

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualty among the sons of medical men is reported:—

Major H. H. Robinson, M.C. with bar, M.O. 9th Wing R.A.F., killed at Mons in aeroplane accident, second son of Dr. H. S. Robinson, of Epsom, Surrey.

OBITUARY OF THE WAR.

JOHN CAMPBELL, M.D., CH.B. LIVERP.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain John Campbell, who died from influenza on Feb. 19th, at the age of 30, was the third son of Mr. Joseph Campbell, of Wigan. Educated at Wigan Grammar School, he passed the London University Matriculation Examination with first-class honours at the age of 15. Six years later he graduated M.B., Ch.B. in Liverpool University, where he gained a Robert Gee Research Fellowship, and subsequently became demonstrator in anatomy. He was for some time surgical tutor and registrar of the Liverpool Royal Infirmary. On August 6th, 1914, he joined the Special Reserve of the R.A.M.C., and was promoted to the rank of Captain in 1915. While in France he won the admiration and affection of his brother officers by his skill as a surgeon and his personal charm. Several papers from his pen have been published in THE LANCET, the last, "An Investigation into the Blood-supply of Muscles," in which he collaborated with Captain C. M. Pennefather, R.A.M.C., appeared in our issue of Feb. 22nd, three days after his death. The profession has lost in him one of the most able of its younger members.

Mr. G. E. Gask having completed his service in France has returned to 41, Devonshire-place, W.

Correspondence.

"Audi alteram partem."

RUPTURED RECTUS ABDOMINIS.

To the Editor of THE LANCET.

SIR,—In your issue of May 17th, under the above heading, Dr. W. Balgarnie draws attention to a rare condition of great interest—the rupture of the rectus abdominis muscle, not as the result of an injury or sudden strain during over-exertion, but as a complication of an acute febrile condition. My own experience is limited to one case, but the rarity of the condition makes each case of value and worth reporting.

The medical officer of a well-known public school asked me, some ten years ago, to see a boy of 15 who had had an attack of measles one month before, followed by broncho-pneumonia, which he still had, with temperature of a remittent type. He gave me the following history:—

Two days before I saw him the patient complained of sudden severe pain in the abdomen below the umbilicus. His temperature, which had been fluctuating downwards, rose to 104° F. There was no sickness. Next day a definite lump, very tender to touch, was found to the right of the middle line below the umbilicus. Temperature still 104°. I saw him next day. He was complaining of abdominal pain more widespread than before. The tongue was furred, temperature 104°, pulse 120. The abdomen was rigid below the level of the umbilicus, but above the umbilicus level the muscles were lax. There was a swelling with fairly defined edges beneath the right rectus below the umbilicus level, very tender to touch, the tenderness extending across the middle line to the left. No tenderness in right iliac fossa, but marked tenderness high up to the left on rectal examination. Bowels open twice. No sickness. It was agreed that the abdominal swelling had increased in size during the last 24 hours.

The diagnosis was in doubt, but in view of the persisting high temperature, rapid pulse, and increasing swelling, it was decided to explore the abdomen, it being impossible to exclude an acute abdominal condition. It was intended to open the abdomen through the right rectus sheath, but on exposing the muscle after opening the sheath it was found to be torn across. I have a note that there was "a good deal of extravasation of blood." The muscle was sutured and the operation concluded without opening the abdomen. The case terminated fatally, the cause of death being stated as "pneumococcic septicæmia."

Perhaps the best review of the subject is by Kahlke,[1] who quotes many authorities from Hippocrates and Galen to our own time. The general opinion seems to be that rupture may occur in a *contracted* healthy muscle as the result of the contraction of an opposing muscle, but only occurs as the result of *its own* contraction if it is degenerated—e.g., in myositis. He states that in rupture hæmatoma or sinking is equally common—i.e., rupture with or without bleeding; and he reports Wells,[2] who found both recti ruptured in a post-mortem examination of a case dying of lobar pneumonia, and comments on the "pale hyaline appearance for some distance from the point of rupture."

I am, Sir, yours faithfully,

Harley-street, W., May 20th, 1919. H. W. CARSON.

THE INSTITUTION OF MATERNITY HOSPITALS.

To the Editor of THE LANCET.

SIR,—I am sorry that I was not present at the recent meeting of the Obstetric Section of the Royal Society of Medicine to support Dr. Victor Bonney's plea for the multiplication of maternity hospitals, as set out in the address published in your columns on May 10th. The needs of the population for medical and surgical beds are more or less adequately provided for by existing institutions; but how many obstetrical beds are there in England outside London? A man who breaks his leg is very soon in bed in some infirmary or cottage hospital under the care of trained nurses and capable medical men. But what proportion of difficult labours occur within reach of a maternity hospital? It is not realised that there are hardly any such hospitals in the provinces; one can only remember

[1] Surgery, Gynecology, and Obstetrics, 1907 iv., 143.
[2] Transactions Chicago Pathological Society, 1899-1901, vol. iv., 483.

ten or a dozen altogether. The workhouse hospitals are available, but these places are not all favourably situated or staffed for maternity work; and it is not every woman who is willing to go to the workhouse hospital. There should be a proper lying-in hospital in every town, and a small maternity home in connexion with every cottage hospital. There are already medical men in every town and district who work obstetric wonders every day in slums and cottages. Give these men the necessary beds, with nurses and simple appliances, and they will soon secure the desired results. They should be paid. Patients who can pay should do so, and those who cannot should be treated at the public cost as a right and not as a charity. Each maternity hospital would be a source of knowledge and experience for doctors, midwives, and mothers alike—a temple for the worship of the modern Lucina.

If the Maternity and Child Welfare movement is to be taken seriously, the provision of hospitals is the most important step, and it should have been taken first and not last. A great deal of trouble and money are being spent on "maternity centres," "schools for mothers," "baby clinics," and "health visitors." These institutions may be multiplied until their local habitations are as common as public-houses; but they can never touch the root of the matter. And the sad feature of the case is that these *placebos* are serving as sops for the public conscience, and are thus doing harm by diverting attention from the main need—hospital accommodation for mothers and sucklings. It would be costly in comparison with the less valuable measures which are now being pushed forward. But the woman with obstructed labour, placenta prævia, or threatened eclampsia has just as strong a claim for hospital treatment as the one with appendicitis. The reason why it has not been provided long ago has always been a mystery to—Yours faithfully,

W. E. FOTHERGILL,
Manchester, May 19th, 1919. Gynæcological Surgeon to the Manchester Royal Infirmary.

"OURSELVES ONLY."

To the Editor of THE LANCET.

SIR,—Referring to Mr. Gedge's letter under this heading in your issue last week, I would point out that besides the British Medical Association and the Medico-Political Union there is the National Medical Union. The members of this body are the men who, having signed the pledge over the Insurance Act, have never altered their opinion that the present Act is derogating to the medical profession and bad for the public. They have never gone on the panel. This is the union and these are the men for all to rally round. If the profession comes up to the standard of 1910 we at once become united again. But to ask non-panel men to join a union whose members have been serving our old patients and taking money out of our pockets is not reasonable. This trade-union excitement is the fruit of the broken pledge. The dignity of the noble art of medicine is to give way to the "down tools" idea of the gasfitter's assistant and the coal-heaver.

I am, Sir, yours faithfully,
E. H. WORTH.

Aldrington-road, Streatham, S.W., May 20th, 1919.

MISSILES AS EMBOLI.

To the Editor of THE LANCET.

SIR,—The following case of pulmonary embolism produced by bullet is of interest in connexion with Sir John Bland-Sutton's lecture on Missiles as Emboli published in THE LANCET of May 10th. I saw the patient with Lieutenant-Colonel Quicke at a clearing station in the 2nd Army at a very busy time when note-taking was very difficult to carry out. I have, however, a short note of the bare facts of the case.

A soldier was admitted to the station on the morning of July 29th, 1918. He had been hit with a rifle or machine-gun bullet a few hours previously. Immediately after the injury he complained of difficulty of breathing. On admission to the C.C.S. he was somewhat cyanosed and dyspnœic, with a small rapid pulse. He was not cold nor was he blanched. The entrance wound was situated in the left loin 2 inches from the spinous processes, at the level of the highest point of the iliac crest. Examination by X ray showed the missile retained 4 inches deep to a pencil mark on the skin over the anterior surface of the chest wall at the level of the junction of the second costal cartilage with the sternum and three fingers' breadth to the right of the sternal border. Death took place 11½ hours after receipt of the injury.

Post-mortem same day. The track of the bullet, on being traced, showed that the latter had traversed the transverse mesocolon, the stomach (two apertures—entrance and exit), the left lobe of the liver, the diaphragm, the posterior surface of the right ventricle (small puncture), one of the cusps of the auriculo-ventricular valve, and had passed into the upper main branch of the right pulmonary artery, where it was arrested. There was blood (about 8 oz.) in the pericardial sac and extravasated stomach contents in the peritoneal cavity. The right lung was collapsed though no wound involving it was present.

I am, Sir, yours faithfully,
Belfast, May 10th, 1919. ANDREW FULLERTON.

THE DISPOSAL OF A PRACTICE.

To the Editor of THE LANCET.

SIR,—I think you will oblige a large number of doctors if you will give us some business advice as to the sale of one's practice. The various transfer agents now suggest one years income rate to be paid by the incoming doctor, whereas some years ago as much as two and a half years' average was paid upon. At present rates, all appears to be for the benefit of the purchaser. Take a case. A doctor whose gross income from all sources of practice is £1200. He has spent 30 to 40 years time and much money in creating and developing this business. He proposes to sell a half share at the rate of £600 to the incomer. Now this sum, when invested, would bring in only £30 p.a., and as the seller practically guarantees the incomer £600 p.a., such is not a business agreement, especially when appointments and panel are transferable. No doubt the incomer sinks £600 in the business; but that is nothing compared with the thousands the seller has, in 30 or 40 years, sunk in it. It is also suggested that the incomer will double the income of £1200. But he never does! The purchaser naturally provides in the agreement that he will have the first right to purchase the second half of the practise at the end of a fixed number of years: and on paying about £600 more. That is, the incomer pays about £1200 for the entire practice and this, when invested, will give the seller about £60 a year! Surely such is a very one-sided transaction. If the purchaser could guarantee that he will make the £1200 p.a. practice into about £2400 p.a. such would be more equitable. Purchasing a share of a practise, with a few years introduction, saves the incomer many years of hanging about, worry, and unhappiness. Let him sink £600 in establishing a practice *by his sole efforts*, and he will see why he should pay two and a half years for a half partnership with a few years introduction, and especially if the seller be over 60 years of age.

I am, Sir, yours faithfully,
R.

THE borough of Islington's war memorial will be an extension of the Great Northern Central Hospital, Islington, which will include a memorial entrance hall, four wards, out-patients' department, and nurses' home, at an estimated cost of £100,000. Plans will be obtained by competition, and Sir Aston Webb, F.R.I.B.A., president of the Royal Academy, will act as assessor.

VITAL STATISTICS OF CALCUTTA.—The total number of deaths registered in Calcutta during the week ending April 12th was 1031, against 994 and 958 in the two preceding weeks, and higher than the corresponding week of last year by 448. There were 268 deaths from cholera, against 209 and 144 in the two preceding weeks (the number is higher than the average in the past quinquennium by 176); 28 deaths from plague, against 26 and 26 in the two preceding weeks, the average of the past quinquennium being 19; 80 deaths from small-pox during the week, against 80 in the previous week; 56 deaths from influenza, against 91 in the previous week. The mortality from fevers and bowel complaints amounted to 86 and 71 respectively, against 107 and 61 in the preceding week. The general death-rate of the week was 59·8 per mille per annum, against 32·8, the mean of the last five years. There were 62 imported deaths. Excluding these, the death-rate of the week was 56·2.

Obituary.

CHARLES BUCKMAN GORING, M.D., B.Sc. LOND.,

PRINCIPAL MEDICAL OFFICER, MANCHESTER PRISON.

NOT only the Prison Medical Service, but the whole medical profession, have sustained a loss by the death, at the age of 49, on May 5th, from influenzal pneumonia, of Dr. Charles Buckman Goring, principal medical officer of Manchester Prison. His career of academic success was brilliant, and his personal qualities remarkable. As a child he gained all the possible prizes at school, but left early, for at 16 a post was found for him in a shipping merchant's office in the City of London, where he stayed some two years, out of touch with his duties, but thoroughly trusted by his employers. His letters and conversations of this early period show that as he passed through the City streets on messages from the firm, he was observing life with the eyes of a Dickens or a Charles Lamb, for he was already a deep student and lover of humanity, and all this time he was planning how to get into the scientific career for which he felt such a desire. He concluded that medicine offered the best and only opening of a scientific character for a penniless man.

In the intervals of his work in the City he studied by himself, won an entrance scholarship to University College, London, and later an entrance scholarship to University College Hospital, thus embarking on his medical curriculum. During his college career he was well known as a debater on philosophical subjects, showing at the outset the bent of his mind. On leaving University College Hospital he went to the Great Northern Hospital, where he was in turn house physician and house surgeon. He had already begun to specialise and be noted among his fellows for work and study in mental and nervous diseases. Unfortunately he contracted scarlet fever, nearly died of its consequences, and had to travel for two years to re-establish his health; most of the time as ship's surgeon to various parts of the world, including military transport work during the South African War. Recovered, he went to Paris, studied nervous diseases at Salpêtrière and other hospitals there under Dr. Raymond and Dr. Babinski, he acquired that love of Paris and French student life which never left him.

His academic career now became a distinguished one. He took the degree of B.Sc. Lond. in 1895, and the M.D. Lond. in 1903. He gained the Entrance Medical Exhibition and was John Stuart Mill Scholar of Philosophy, and some four years ago was elected a Fellow of University College. In 1914 appeared his chief work, "The English Convict," a statistical study, which excited world-wide interest and was published by the Government in 1913. The anthropometrical observations for this work, collected in part by members of the medical staff at other prisons, were tabulated and arranged while he was at Parkhurst Prison. This arduous task, which included the preparation of the report, continued to occupy his sole energies on his being detached from Parkhurst during the ensuing two and a half years in London, where he had the interest and counsel of Professor Karl Pearson. He was appointed junior medical officer, Broadmoor Criminal Lunatic Asylum in January, 1902, transferred to the prison service in 1903, was deputy medical officer at Parkhurst and Brixton prisons and appointed medical officer at Manchester Prison in February, 1918. The department of which he was a servant only too fully realise the loss of one of its most brilliant, zealous members, and his kindly disposition and deep sympathy with others had made him beloved by all who knew him.

Sir Bryan Donkin writes:—

May I offer a brief tribute to the memory of Dr. Charles Goring, whose recent death is a grievous blow to all dear to him and a source of deep regret to all who knew him well. I was acquainted with him from the time he entered the Prison Medical Service, and met him very often on the many occasions of my visits to the hospital at Parkhurst Convict Prison, where he was on the staff for several years. It was during those years that he contributed by far the largest individual share of observations to an inquiry which had been already entered upon, with the help of some of the prison medical officers, in order to test the value of certain doctrines concerning the nature of criminals, that had attained wide notoriety and were generally known as those of the "School of Lombroso." When all the very numerous and laborious observations deemed necessary had been made, the whole mass of material, as well as the work of drawing up a report on it, was given to Dr. Goring, in view of his recognised ability and keen interest in the subject. This report was ultimately published in 1913 by the Government, under the title of "The English Convict: A Statistical Study." It bears striking testimony to Dr. Goring's immense power of work, his exceptionally great ability, and his unswerving devotion to the object he had in view of arriving at the true meaning of the material with which he had to deal. In consequence of the publication of this great work and the wide interest it occasioned, both here and abroad, Dr. Goring received the Weldon prize and medal of the University of Oxford.

It was owing to the great prominence of this study of the English convict that when I was writing on the subject of Mental Defect in Criminals in the *Journal of Mental Science* in January, 1917, I could not possibly pass over without comment some of the conclusions arrived at and the methods employed by Dr. Goring from which I differed widely. My words were replied to by Dr. Goring in that journal at considerable length in April, 1918, and my further criticisms, written late in that year, were printed in the April number of the journal, which was issued a few days after Dr. Goring's death on May 5th. This sad concurrence of happenings causes me great regret. I first heard the grievous news on the 12th. This difference of view-point on parts of Dr. Goring's work between him and myself, and the unavoidable appearance at this time of the article I have referred to, make me all the more anxious to record my own great regard for him, and my whole-hearted admiration for the exceptional degree of ability, zeal, and conscientiousness which informed all the work he took in hand, whether of philosophical or practical nature, including the numerous minute but highly responsible duties of a prison medical officer. He will be long remembered by all who knew him well as a man of outstanding intellectual gifts, of wide knowledge, and of singularly attractive personality.

Dr. Goring married a daughter of John and Frederika Macdonald. To his widow and two young boys the sympathy of the medical profession will go out.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—As the result of the special and ordinary Primary Examination for the Fellowship, held on May 7th, 8th, 13th, and 14th, for which 73 candidates presented themselves, 38 candidates were approved (35 men and 3 women) and 35 were rejected. The following are the names and schools of the successful candidates:—

Edward Townley Bailey, Middlesex Hosp.; Walter Briggs, Manchester Univ.; August Lyle Buchanan, Sydney Univ.; Kenneth Entwisle Bury, St. Thomas's Hosp.; Frederick Cecil Wray Capps, St. Bart.'s Hosp.; Cecil Stedman Cloake London Hosp.; Isaac Whitla Corkey, Trinity Coll., Dublin; Kenneth Vincent Deakin, Manchester Univ.; Grace Mary Denham, Royal Free Hosp.; Edward Charles Dodds, Middlesex Hosp.; Samuel Charles Fitzpatrick, Melbourne Univ. and Middlesex Hosp.; John Fereday Hackwood, St Thomas's Hosp.; William Allan Hailes, Melbourne Univ. and Middlesex Hosp.; Leslie William Hefferman, Middlesex Hosp.; Shankar Ramchandra Joglekar, Bombay Univ. and Middlesex Hosp.; John Robert Lee, Melbourne Univ. and Middlesex Hosp.; Eric Ivan Lloyd, Cambridge Univ. and St. Bart.'s Hosp.; Frederick Arthur Maguire, Sydney Univ. and Middlesex Hosp; Mohamed Abdel Wahhab Moore, Cairo Medical School. Thomas Stanley North, St. Mary's Hosp.; William Heneage Ogilvie, Oxford Univ. and Guy's Hosp.; Robert Young Paton, Cambridge Univ. and St. Mary's Hosp.; John McLean Pinkerton, Glasgow Univ. and St. Bart.'s Hosp.; Olive Gwendoline Potter, Girton Coll. and London Hosp.; Edith Marjorie Rooke, Royal Free Hosp.; Herbert Leyland Sackett, St. Bart.'s Hosp.; Thomas Lewis Lindsay Sandes, Trinity Coll., Dublin; Charles Frank Schuler, St. Thomas's Hosp.; Adolph Sebba, London Hosp.; Sobhi Rizkallah Simaika, St Bart's Hosp.; Bernard Sangster Simmonds, Middlesex Hosp.; Clive Nigel Smith, Sydney Univ. and Middlesex Hosp; Theodore Howard Somervell, Cambridge Univ. and Univ. Coll.; Mark Tree, London Hosp.; Alfred John Trinca, Melbourne Univ. and Middlesex Hosp.; William Edward Mandall Wardill, Durham Univ. and St. Bart.'s Hosp.; Estlin Hugh Weatherall, St. Bart.'s Hosp.; and Charles Paul Wilson, Middlesex Hosp.

CORRECTION.—The announcement of the election of "Dr. George A. Ander" as Fellow of the Royal College of Physicians of London was an error in these columns last week. The correct name is "Auden." Dr. George A. Auden is the school medical officer of Birmingham.

Dr. Septimus Sunderland, in recognition of the valuable services which he has for many years rendered, as physician, to the French Hospital and Dispensary in Shaftesbury-avenue, has been awarded the decoration of Chevalier de la Légion d'Honneur.

THE LATE DR. JOSEPH WIGLESWORTH.—Dr. Wiglesworth, who met his death on Porlock Cliffs while pursuing his absorbing hobby of bird study, was for long superintendent of the Lancashire County Asylum at Rainhill, and lecturer on mental diseases at the University of Liverpool. Most of his work appeared in the *Journal of Mental Science*, dealing chiefly with the morbid anatomy of certain chronic mental affections. It was of high value, and secured him the election to the presidency of the Medico-Psychological Association.

SCHOLARSHIPS AND GRANTS OF THE BRITISH MEDICAL ASSOCIATION IN AID OF SCIENTIFIC RESEARCH.—The Council of the British Medical Association is prepared to receive applications for an Ernest Hart Memorial Scholarship, of the value of £200 per annum, for the study of some subject in the department of State medicine; and for three research scholarships, each of the value of £150 per annum, for research into some subject relating to the causation, prevention, or treatment of disease. Each scholarship is tenable for one year, commencing on Oct. 1st, 1919. A scholar may be reappointed for not more than two additional terms.

Applications will also be received for grants for the assistance of research into the causation, treatment, or prevention of disease. Preference will be given, other things being equal, to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine.

The conditions of the award of the scholarships and grants are stated in regulations which will be supplied to applicants by the Medical Secretary of the Association, 429, Strand, London, W.C. 2., and must be made not later than Saturday, June 28th, 1919, in the prescribed form. Each application should be accompanied by testimonials, including a recommendation from the head of the laboratory, if any, in which the applicant proposes to work, setting out the fitness of the candidate to conduct such work and the probable value of the work to be undertaken. This is not intended, however, to prevent applications for grants in aid of work which need not be performed in a recognised laboratory.

LONDON INTERCOLLEGIATE SCHOLARSHIPS BOARD: ENTRANCE SCHOLARSHIPS AND EXHIBITIONS, 1919.—Seventeen medical entrance scholarships and exhibitions, of an aggregate total value of above £1550, tenable in the Faculty of Medical Sciences at University College and King's College, and in the Medical Schools of Westminster Hospital, King's College Hospital, University College Hospital, the London (Royal Free Hospital) School of Medicine for Women, and the London Hospital, will be offered for competition on Tuesday, July 1st, and not on July 15th, as originally arranged. Full particulars and entry forms may be obtained from the secretary of the board, Mr. S. C. Ranner, M.A., Medical School, King's College Hospital, Denmark Hill, London, S.E.5.

ROYAL INSTITUTION.—Next Tuesday, May 27th, at 3 o'clock, Professor W. H. Bragg will deliver the first of two lectures at the Royal Institution on Listening Under Water (the Tyndall Lectures). On Thursday, May 29th, at 3 o'clock, Sir Valentine Chirol will give the first of two lectures on the Balkans. The Friday evening discourse, on May 30th, at 5.30 o'clock, will be delivered by Sir John Rose Bradford on a "Filter-passing" Virus in Certain Diseases. The closing discourse of the session will be given on June 6th by Professor Sir Ernest Rutherford on Atomic Projectiles and their Collisions with Light Atoms. On Saturday, May 31st, at 3 o'clock, Mr. J. M. Price will give the first of two lectures on the Italian Front, illustrated by kinematograph films lent by the Italian Government.

ROYAL INSTITUTE OF PUBLIC HEALTH: ANNUAL CONFERENCE.—The annual conference of the Royal Institute of Public Health will be opened in the Mansion House, London, under the presidency of the Lord Mayor, on June 25th, at 3 P.M. On the three following days the conference will be held in the Guildhall, when the following subjects will be discussed: Housing in Relation to Public Health (chairman, Sir Aston Webb); Maternity and Child Welfare (Mrs. Lloyd George); The Tuberculosis Problem under After-War Conditions (Sir William Osler); The Prevention and Arrest of Venereal Disease (Lord Sydenham); The Work of the Ministry of Health (Colonel W. R. Smith).

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE FRIENDLY SOCIETY.—The monthly meeting of the committee was held on May 16th at 300, High Holborn, W.C. The accounts presented showed a considerable decrease in the influenza claims. The experience of chronic claims on those in half pay was below the expectation, and had been gradually falling for some years, thus proving that the strict medical examination of new proposers was beginning to tell in the society's favour. The return of medical men to their practices from Army service has resulted in a large increase of new business, and the figures submitted show that the year is likely to be a good one. The new scheme of sickness insurance for medical women has been most favourably received, and proposals are coming in well under this heading. The fact that this is the first serious attempt to establish a permanent protection against sickness and accident for women practitioners has aroused interest, and the society's experience for the last 35 years in dealing with sickness claims is likely to be of benefit in the administration of this new department. The society has the unique record of not charging any extra premium for war risks on either life or sickness rates, and this has been much appreciated by the members. For full particulars apply to Bertram Sutton, secretary, Medical Sickness Society, 300, High Holborn, W.C. 1.

THE GLASGOW UNIVERSITY CLUB.—The members of the Glasgow University Club will dine at the Trocadéro Restaurant on Friday next, May 30th, at 7 P.M., the Right Hon. Sir Robert S. Horne, Minister of Labour, in the chair.

BELGIAN DECORATIONS.—The following decorations have been conferred by the King of the Belgians in recognition of valuable services rendered in the Allied cause:—*Order of the Crown—Commander:* Surgeon Rear-Admiral J. J. Dennis, C.B. *Officer:* Dr. Herbert Edmund Cuff, principal medical officer, Metropolitan Asylums Board. *Order of Leopold—Chevalier:* Dr. A. G. Bateman (since deceased).

THE DOGS' PROTECTION BILL.—The Royal Faculty of Physicians and Surgeons of Glasgow has passed the following resolution on this Bill:—

In view of the great advances in medicine and surgery consequent on the exact knowledge gained from experiments on dogs, the Royal Faculty of Physicians and Surgeons of Glasgow is of opinion that the Dogs' Protection Bill now before the House of Commons, if passed into law, would seriously impede the progress of this knowledge.

ALBERT MEDAL.—The Albert Medal has been awarded to Surgeon Lieutenant-Commander E. L. Atkinson for gallantry on a burning ship. The fire had been caused by an explosion while H.M.S. *Glatton* was lying in Dover harbour. Lieutenant-Commander Atkinson was rendered unconscious by the explosion, but shortly recovered and was able to bring two still unconscious men on to the upper deck. He was engaged in rescuing a third man when he was blinded and wounded in the left leg by a second explosion. Having extracted a piece of metal which impeded the movement of his leg, he placed the third man on the upper deck, and, although totally unable to see, was able by feeling his way to rescue two more men. When rescued himself he was wounded and burned to such an extent that his life was for some time in great danger.

THE SERVICES.

ARMY MEDICAL SERVICE.

Temp. Cols. J. Atkins and J. Sherren relinquish their commissions and retain the rank of Colonel.

Capt. A. D. Stirling to be a Deputy Assistant Director-General (temporary) to complete establishment, and to be temporary Major whilst so employed.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonels relinquishing the acting rank of Colonel on re-posting: A. H. Safford, W. Ruch, J. A. Hartigan, J. P. Silver.

Lieut.-Col. H. R Bateman to be acting Colonel while employed as A.D.M.S. of a Division.

Lieut.-Col. A. H. O. Young retires on retired pay.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Majors E. T. Potts, R. E. Humfrey, R. Storrs, S. M. W. Meadows, S. E. Lewis; Capt. and Bt. Major J. D. Kidd; Capts. R. W. Galloway and A. N. R. McNeill; Temp. Capts. H. Stokes and F. R. Thornton.

To be acting Lieutenant-Colonels: Major A. J. Williamson; Capts. (acting Major) R. R. Thompson and E. Catford; Temp. Capts. H. E. S. Stiven, J. Scott, and D. Miller.

Temp. Major (acting Lieut.-Col.) J. Dalrymple to be acting Colonel.

Major R. B. Hole to be acting Lieutenant-Colonel whilst specially employed.

Temp. Major C. A. Pannett (Captain, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

The undermentioned relinquish the acting rank of Major: D. W. Pailthorpe, C. A. Bernard, A. Heudry, T. C. R. Archer, A. D. Stirling, T. I. Duo, R. L. Ritchie, J. Biggam, H. S. Milne; Temp. Capts. H. Young, W. Morris, J. A. Paterson, H. G. Pesel, J. D. Cooke, M. W. Littlewood, A. W. H. Donaldson, F. J. McLay, J. T. Morrison, A. E. Drynan, J. C. Robb, W. Russell, A. Massey, J. Crawford, C. O. Bodman, T. T. Higgins, J. D. McEwen, R. L. Scott, R. R. H. Leach, A. T. Mackenzie, F. S. Machin, J. M. Clements, H. Corder, C. Rutherford, G. P. Armstrong, J. Buchanan, J. V. Holmes, W. J. Pearson, R. B. Heygate, O. C. Link.

To be acting Majors: Capts. A. E. Richmond, A. G. P. Hardwick, J. K. Gaunt, R. R. Thompson, C. V. Shackleton; Temp. Capts. J. T. Morrison, A. M. Malcolmson, G. T. Foster Smith, C. Averill, F. R. Kirkham, T. M. Crawfurd, C. M. Geddie, H. G. Joyce, F. G. Milne,

W. A. Hotson, A. G. Troup, C. G. McAdam, N. McA. Gregg, D. S. Taylor, J. C. D. Allan, K. Black, H. N. Webber, H. H. L. Ellison, F. S. Machin, R. H. Stevens, R. Heaton. Whilst specially employed: Capt. H. F. Jowett; Temp. Capts. H. H. O'Heffernan, W. F. Dunlop, W. G. Waugh, C. Clyne, R. Nichol, C. G. Skinner, A. G. Macdonald.

Temporary Captains relinquishing the acting rank of Major on re-posting: S. S. Dunn, E. A. C. Beard, W. B. Davy, P. W. Hampton, S. W. Williams.

Temp. Capt. T. P. Delvin to be temporary Major.

Late temporary Captains granted the rank of Captain: A. J. Smith, F. G. Crookshank, J. D. C. White.

Temporary Lieutenants to be temporary Captains: R. M. Moore, W. H. Croly, A. W. G. Clark, A. M. Cowie, A. V. McMaster.

Officers relinquishing their commissions: Temp. Lieut.-Cols. F. H. Maturin, R. Bruce, F. R. Hill; Temp. Major J. J. Abraham (granted rank of Lieutenant-Colonel); Temp. Majors retaining the rank of Major: R. A. Beaver (on ceasing to serve with the Beaufort War Hospital), W. L. Braddon, H. Dickie, R. H. Trotter (on ceasing to serve with the Huddersfield War Hospital), D. W. Hume and J. S. Law (on ceasing to be employed with the Norfolk War Hospital) W. G. K. Barnes, H. H. Serpell, J. A. Torrens; Temp. Capt. (acting Major) W. L. Lyall (granted rank of Major); Temp. Capt. and Bt. Major W. J. Tulloch (retains the Bt. rank of Major). Temp. Capts. granted rank of Major: C. W. G. Bryan, S. B. B. Campbell, H. T. Newling, L. Anderson, W. T. Hedley, J. D. Hart, T. Ferguson, H. S. Davidson, J. Cunningham, P. J. Chissell, G. B. Elliott, J. S. Levis, W. Brown, F. B. Manser, J. S. Arkle, G. M. Miller, B. W. Housman, J. M. Donnan, H. W. Powell, F. B. Winfield, B. Whitehead, J. Parkinson, F. P. Joscelyne. Bt. Major H. H. Raw (retains the Bt. rank of Major). Temporary Captains retaining the rank of Captain: W. F. V. Simpson, J. E. Moorhouse, J. P. Blockley, E. V. Dunkley, A. P. Thom, G. Thomson, D. C. Druitt, W. T. Thomson, H. D. Stewart, L. R. Thomson, L. L. Satow, B. Sweeten, E. A. S. Shaw, J. A. Ross, A. J. Eagleton, R. J. Tait, C. Thompson, A. H. Towers, A. W. Soper, E. White, H. N. Everard, A. G. M. Middleton, W. J. Deadman, W. E. Burrows, G. McNeil, G. H. Morris, R. J. Merson, W. Thomas, S. H. Hall, J. Rickards, R. M. Johnston, A. E. Pinniger, N. C. Patrick, A. S. M. Palmer, B. W. Gonin, E. M. le P. Power, H. F. Fenton, F. L. Rigby, C. D. Pile, T. Rushcock-West, A. B. Waller, R. A. W. Procter, W. F. Rhodes, H. R. Pollock, R. B. Roberts, H. C. Attwood, J. Whitehead, W. Warnock, F. A. Winder, J. Ramsbottom, W. H. Rayner, G. F. Porter, J. G. McColl, H. M. Agnew, P. M. Heath, W. A. Brown, W. B. Anderson, R. J. Croxford, F. R. Barwell, R. M. Erskine, D. F. Macdonald, J. A. Hendry, J. S. Mitchell, J. P. Douglas, J. Dagliesh, E. W. Diggett, E. P. Harding, J. Cullen, J. A. Mortimer, R. A. M. Macleod, J. Cullen, N. Macphail, M. T. MacMahon, S. E. Cathcart, W. S. Badger, J. R. C. Gordon, J. N. Cruickshank, C. K. Carroll, J. L. Hendry, T. Barbour, H. W. Fox, H. A. Fenton, G. M. Mayberry, C. Cairnie, G. J. Faric, A. A. Cooper, C. E. A. Goddard, S. G. J. Dowling, C. F. Brady, D. T. Evans, J. J. Bekenn, R. A. Campbell, J. Cathcart, A. G. Carment, J. E. Forster, A. Barber, P. Drummond, E. W. Atkinson, W. H. W. C. Carden, R. L. Crabb, J. T. Armstrong, T. Coogan, E. L. Christoffelsz, J. R. Collins, A. H. Gray, J. Bradley-Hughes, R. D. Fitzgerald, A. W. Forrest, G. B. Courtney, A. Fothergill, D. H. Collingham, F. P. Evers, J. C. Boyd, A. Boothroyd, W. J. Edgar, A. Cochrane, A. H. Coleman, W. S. George, E. Gandy, H. S. Brown, E. R. Dermer, W. D. Hardy, R. S. Drew, W. P. Pinder, E. I. Davies, C. N. Binney, G. C. M. Davies, W. E. Giblin, R. Hannah, J. C. Glen, J. M. Gillespie, H. W. Fisher, A. Goodwin, C. L. Driscoll, B. W. H. Fergus, E. W. Adcock, W. N. Gilmour, J. I. Greig, M. K. Acheson, G. F. Holt, S. R. Lane, H. J. Hickin, E. H. R. Altounyan, E. R. G. Greville, T. A. Hindmarsh, M. G. Hannay, R. M. Hill, W. P. Bonner, A. Galletly, A. J. Ballantyne, W. H. Houton, E. M. Fannin; Temp. Hon. Capt. R. M. Bradley (retains the honorary rank of Captain); Temp. Lieut. I. L. MacInnes; Temporary Lieutenants retaining the rank of Lieutenant: K. H. Dyke, A. J. de Spiganoviez, F. J. Fox, E. Burnet, S. Osborn, C. H. Steinbach, S. W. Ingram; Temp. Hon. Lieut. A. B. Pastel (retains the honorary rank of Lieutenant).

SPECIAL RESERVE OF OFFICERS.

Capt. W. M. Dickson to be acting Lieutenant-Colonel.

Captains to be Majors: C. V. Nicol and M. R. Taylor.

Capt. G. Daziel to be acting Major whilst specially employed.

Captains relinquishing the acting rank of Major on re-posting: W. J. Adie, A. J. Gilchrist, G. S. Mather, W. H. Elliott, W. Broughton-Alcock, W. B. Postlethwaite, J. C. Spence.

The undermentioned to be acting Majors: Capts. S. W. M. Jones, F. Oppenheimer, C. R. McIntosh, E. A. Wilson, H. D. Brown, R. Dixon, Lieut. R. J. Patchett.

Lieutenants to be Captains: J. D'A. Champney, A. G. McColl, A. Piney, J. G. Lawn, M. Chalmers, A. Kennedy, J. H. Tighe, A. E. Cochrane, W. S. L. McLeish, J. Nicolson, J. J. Treanor, W. A. Walker, N. E. ff. Kemm, D. MacQueen, V. J. Perez, I. G. Innes, J. Gilmour, G. M. S. Smith, G. A. Mitchell, G. H. Gislow-Jackson, W. A. Jackson, J. D. White.

TERRITORIAL FORCE.

Lieut.-Cols. (acting Colonels) C. H. Howkins, C. T. Green, E. V. Gostling, A. M. McIntosh relinquish their acting rank on vacating the appointment of Assistant Director of Medical Services.

Lieut.-Col. H. G. Amport relinquishes his commission on account of ill health and retains the rank of Lieutenant-Colonel.

Major (acting Lieut.-Col.) J. G. Martin relinquishes his acting rank on ceasing to be specially employed.

Major A. L. S. Tuke vacates the appointment of Deputy Assistant Director of Medical Services.

Major M. G. Foster is seconded while holding a temporary commission in the Army Medical Service.

Capts. (acting Lieut. Cols.) G. H. Dominy, G. E. G. Mackay, H. G. Magrath relinquish their acting rank on ceasing to be specially employed.

Capts. (acting Majors) H. P. Ashe, E. V. Connellan, H. Connop, S. S. Greaves, A. C. Wallace, W. T. D. Mart, G. G. Middleton, J. Morham, R. Rager, C. D. S. Agassiz, J. G. Hill, D. A. R. Haddon, J. C. Newman, A. P. Watson, and A. C. Hepburn relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Major) C. F. Searle relinquishes his commission on account of ill health contracted on active service and is granted the rank of Major.

Capt. (acting Major) J. H. Thomas to be acting Lieutenant-Colonel whilst specially employed.

The undermentioned Captains to be acting Majors whilst specially employed: J. W. Anderson, J. C. W. Methven, R. R. Powell.

Capts. (acting Majors) L. T. Whelan and J. Dale relinquish their acting rank on vacating the appointment of Deputy Assistant Director of Medical Services.

Capt. G. H. Hunt is restored to the establishment.

1st London General Hospital: Capt. Sir T. J. Horder is restored to the establishment on ceasing to hold a temporary commission in the R.A.M.C.

2nd London Sanitary Company: Lieut. L. Lloyd to be Captain.

1st Southern General Hospital: Capt. F. D. Marsh, M.C., to be acting Major whilst specially employed and to remain seconded.

1st Northern General Hospital: Major G. Hall, from T.F. Reserve, to be Major.

2nd Northern General Hospital: Capt. J. B. Hall is restored to the establishment.

2nd Southern General Hospital: Major C. H. Walker and Capts. J. M. Fortescue-Brickdale, H. S. Harris, H. G. Kyle, A. L. Flemming, J. Freeman, C. F. Coombs, and W. Cotton are restored to the establishment.

4th Northern General Hospital: Capt. F. E. Withers is restored to the establishment.

5th Southern General Hospital: Capt. (acting Major) C. H. Saunders relinquishes his acting rank on ceasing to be specially employed; Capt. H. L. Driver is restored to the establishment.

4th London General Hospital: Major G. N. Biggs is restored to the establishment.

3rd Northern General Hospital: Capt. (acting Major) J. B. F. Wilson relinquishes his acting rank on ceasing to be specially employed.

4th Southern General Hospital: Capt. (acting Major) G. C. Sandford relinquishes his acting rank on ceasing to be specially employed.

INDIAN MEDICAL SERVICE.

Major (temp. Lieut.-Col.) R. A. Needham is permitted to retain the temporary rank of Lieutenant-Colonel while holding the appointment of Deputy Director-General.

Lieut.-Col. W. G. P. Idm re to be Colonel.

Temp. and Honorary Capts. C. Fernandes and S. K. Engineer to be Temporary and Honorary Majors.

Officers of the Indian Medical Service holding the temporary ranks and appointments in the field as D.s.M.S., with the acting rank of Surgeon-General or D.D's.M.S., with the acting rank of Colonel, are now to be permitted to count service therein towards the additional pensions for which Surgeon-Generals and Colonels respectively are eligible after certain periods of active employment in permanent appointments, not necessarily continuous.

ROYAL AIR FORCE.

Medical Branch.—Hon. Lieut.-Col. G. Drever (retains the rank of Lieutenant-Colonel) and Major (acting Lieut.-Col.) R. H. McGiffen (Staff Surgeon, R.N.) relinquish their commissions on ceasing to be employed.

Major A. Paling relinquishes his commission on account of ill health, and is permitted to retain his rank.

The undermentioned are transferred to the unemployed list: Major P. H. Hadfield, Capts. J. J. O'Muliane and C. Dickson, Lieut. J. W. Yorke-Davis.

Dental Branch.—Lieut. R.C.T. Evetts is transferred to the unemployed list.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The April issue of this journal opens with a preliminary report of an investigation on of the immunity reactions in Egyptian bilharziasis, in which Major N. Hamilton Fairley, of the Australian Army Medical Corps, deduces from his investigations that from the cercariæ of the two species, *Schistosoma mansoni* or *S. hæmatobium*, a specific antigen can be produced which reacts with bilharzia-infected serums, and that by the practical application of the test the discovery of the lethal action of a parasiticidal drug may be facilitated. Referring to the conclusions of Professor Leiper that none of the substances of known anthelmintic or cercaricidal value could be introduced into the portal system in doses lethal to adult parasites, the author says, "I still think, however, that with a complement-fixation reaction now available and with the potentialities of synthetic chemistry as yet unexplored, a rational optimism is justifiable, and that further research along the line enunciated above is still urgently indicated."

In War Experiences in Dysentery, 1915–1918, Captain Philip H. Bahr and Captain John Young review articles recently published in THE LANCET and other journals on the disease as it occurred in the Egyptian Expeditionary Force. The authors, as a result, suggest that attention should be paid to the following points by those responsible for the health of communities or armies in countries where dysentery is endemic. 1. Blood and mucus stools, with or without tenesmus, mean dysentery, and at the earliest possible moment an experienced pathologist should report on the nature of the exudate (amœbæ may not be found at first examination, but at least the exudate will indicate the probable type of the disease). 2. If immediate microscopical diagnosis is impossible, give a moderate dose of antidysenteric serum and base further treatment on the result of laboratory findings when procured. Further serum treatment depends on the result of the initial dose. 3. In amœbic cases emetine treatment must be consistent, and a minimum of 12 gr. given in daily doses of 1 gr. each. 4. Whatever the type of case, treatment by emetine or serum is only slightly more important than treatment by rest and dieting.

A useful clinical note is supplied by Dr. T. H. Jamieson and Dr. W. J. Lindsay on the effects of long-continued dosage with quinine on the visual apparatus. Though their experimental cases have been few in number they tend to show that in normal healthy men large doses up to 90 gr. of quinine hydrochloride daily for three days have not even a temporary effect on the fields of vision.

Other articles in the same issue are "Soldier's Heart," by Dr. Adolphe Abrahams, and "Bearer Work of a Field Ambulance," by "Captain, R.A.M.C. (S.R.)."

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Pensions Committee.

Sir L. WORTHINGTON-EVANS (Minister of Pensions) gave evidence before the War Pensions Committee at the House of Commons on May 14th, Sir MONTAGUE BARLOW being in the chair.

Dealing with the establishment of convalescent centres the Minister of Pensions said that a great many men who had been discharged from hospital had got employment, but their health might get worse, and they would then find it necessary to come back to the Ministry for further treatment. By means of these centres such men could not only improve their health, but also get training, which would fit them for their return to civil employment. Those who were still in hospital would be able to get out sooner if they could be drafted to a convalescent centre.

Sir HENRY HARRIS called the attention of the Minister of Pensions to an American invention for using the kinematograph for photographing the muscles of the men in order to ascertain if they were fit to undertake particular work.

Sir L. WORTHINGTON-EVANS said that this particular invention had not been brought to his notice, but his department were anxious to take advantage of all modern aid to enable them to do their work as efficiently as possible. Dealing with the question of the medical boards, the right honourable gentleman said that a man, if he were dissatisfied, could always appeal to the medical referee. He thought it would have been a good thing if every man had had his medical history brought down to date on his discharge from the army. That would have been satisfactory, both from the point of view of the man and that of the taxpayer. The proposal had been made, but he believed that it had been found impossible. The War Cabinet had considered it, but difficulties, both disciplinary and financial, had revealed themselves on examination. The suggestion that it should be done during a man's 28 days' furlough had to be abandoned. It was estimated that the proposal would have cost £4,000,000 to carry out. It would, however, be done so far as the army of occupation was concerned. Only 10 per cent. of the pensions were permanent; 90 per cent. were temporary and subject to revision.

The Committee resumed on the following day, when the Minister of Pensions continued his evidence. He admitted the sentimental reason in favour of a statutory right to pensions. He had no objection to a statutory right so long as it did not deprive a man of all the facilities for having his case properly considered. Sir L. WORTHINGTON-EVANS proceeded to deal with certain alterations in the warrants under which pensions are granted for which Treasury sanction had been applied for.

A member of the Committee asked the Minister of Pensions why nurses were not included in the warrant.

Sir L. WORTHINGTON-EVANS said he could not see why they had been left out, and he should be very glad if the Committee made a recommendation on the matter.

The Committee adjourned.

HOUSE OF LORDS.

THURSDAY, MAY 15TH.

Scottish Board of Health Bill.

The House went into Committee on the Scottish Board of Health Bill.

Lord FORTEVIOT moved the addition of a proviso to Clause 4 in reference to the transfer to the Board of all the powers and duties of the Secretary for Scotland and the Highlands and Islands (Medical Service) Board to secure that a consultative council should be established as provided in Section 5 of the Act for the special purpose of advising the Board in matters affecting or incidental to the health of the people in the Highlands and Islands of Scotland, and in matters affecting the administration of the Highlands and Islands (Medical Service) Fund constituted by Section 1 of the Highlands and Islands (Medical Service) Grant Act, 1913.

Lord STANMORE said he hoped the amendment would not be pressed. The Government were anxious that the work of the Highlands and Islands Board should be continued, and he was prepared to say on behalf of the Government that such a consultative committee as had been suggested by Lord FORTEVIOT would be set up as part of the machinery of the Act when passed into law.

The amendment was withdrawn.

Viscount HALDANE moved an amendment to Clause 6 dealing with the staff to provide that in the making of appointments equal consideration should be given to the suitability of persons of both sexes.

Lord STANMORE accepted the amendment, which was agreed to.

The Bill passed through the Committee stage and was reported to the House.

FRIDAY, MAY 16TH.

Medical Examination of Dockyard Workmen.

Mr. A. SHORT asked the Secretary to the Admiralty whether it was a practice to submit workmen to medical examination before engaging them for work in dockyards and elsewhere; and, if so, would he state the reason; whether he was aware that men who had worked for many years for Admiralty contractors and had never had to submit to medical examination were now being compelled to submit themselves in order to obtain work under the Admiralty; whether he was aware that if this practice were resorted to by private employers many men now in work would be thrown out and the volume of unemployment increased; and whether this practice would be reconsidered.—Dr. MACNAMARA replied: In accordance with the dockyard regulations workmen proposed for entry in the Royal Dockyards or other Admiralty establishments are required to be passed by the medical officer of the establishment. The medical examination has been much simplified during the war, and now consists of a more or less superficial examination for the purpose of recording in a regular manner any serious physical defects of the entrants; and to ensure, as far as possible, that the men proposed to be entered are physically fit for their proposed employment. It is considered necessary to retain this method of procedure.

Rabies Treatment.

Mr. J. F. GREEN asked the Parliamentary Secretary to the Board of Agriculture whether he would supply the names and addresses of the people bitten by alleged mad dogs; if he would inform the House whether the alleged microbe of rabies had ever been indisputably identified; if so, by whom, when, and where; how the results of the post-mortem examination of the carcass of an alleged mad dog differed from those of dogs suffering from any other form of acute cerebral irritation; and was he aware that there had been more than 3000 deaths from hydrophobia in persons who had been protected against it by antirabic virus at the various Pasteur institutes.—Sir A. GRIFFITH-BOSCAWEN replied: The first part of the question should be addressed to the Local Government Board as the Department responsible for the treatment of people who have been bitten by rabid dogs. The causal agent of rabies was cultivated artificially by Noguchi at the Rockefeller Institute, U.S.A., in 1912. There are present in the brain of a mad dog specific bodies (Negri bodies) which are diagnostic and which are not found in the brain of a dog suffering from any other form of acute cerebral irritation. The Board have no information as to the latter part of the question, but they are informed that the number of people who die after treatment is under 1 per cent., as compared with at least 16 per cent. of deaths among those who have been bitten by rabid dogs and have not been treated.

TUESDAY, MAY 20TH.

Ministry of Health Bill.

The House considered the Ministry of Health Bill on report.

Viscount SANDHURST stated that he had been in communication with the Prime Minister regarding the amendment inserted in the Bill in Committee providing for one Parliamentary Under Secretary. The Government could not assent to that, but the Prime Minister would agree that in the first instance one of the Parliamentary Under Secretaries should sit in the House of Lords. He would move an amendment to that effect on the third reading. To meet the objections which had been urged in Committee against the proposed consultative councils the Government proposed to set up four committees—a medical consultative committee, an insurance committee, a Local Government committee, and a general committee—under such conditions that they would not be likely to become mere obsequious followers of the Minister. Compensation would be given to those members who could not afford to give their services.

The Marquis of SALISBURY said he agreed to the establishment of the first two committees, but as to the third and fourth committee and the proposed additional Under Secretary he reserved liberty of action.

Lord BLEDISLOE moved a new clause providing that the Minister should have power to institute such proceedings as might be necessary to enforce compliance with the law relating to the sale and advertisement of any patent, secret, or proprietary remedy or appliance.—Viscount SANDHURST said that he sympathised with the object the noble lord had in view, and in accordance with an undertaking given in Committee further consideration had been given to this matter. The more they considered it, however, the more complicated it was found to be. Acceptance of the amendment would not improve matters. He suggested that he

should consult the Attorney-General and the Director of Public Prosecutions to see if some proposal could be made on the third reading to meet the case.—The amendment was withdrawn on this understanding.

An amendment to Clause 8, moved by Lord SALISBURY and accepted by Viscount SANDHURST, was agreed to providing that when the Minister had to establish a consultative committee by Order in Council such Order should be laid on the table of both Houses for a certain number of days, and should not be effective without a definite resolution moved and carried in both Houses.

The report stage of the Bill was concluded.

HOUSE OF COMMONS.

WEDNESDAY, MAY 14TH.

The Status of Sir George Newman.

Mr. JESSON asked the President of the Local Government Board whether, in view of the announcement that Sir George Newman, the new principal medical officer of the Board, was to have the status of a secretary of the Board, he would indicate what duties had been assigned to Sir George Newman; and whether those duties contravened the rule which had hitherto prevailed by which the position of professional and administrative advisers of the departments of State had invariably been separately held.—Major ASTOR (Parliamentary Secretary to the Local Government Board) replied: The organisation of the Board's staff, both medical and administrative, and the allocation of duties are under consideration pending the establishing of the Ministry of Health, and it would be premature to make any statement thereon until Parliament has passed the Bill for setting up the new Department.

THURSDAY, MAY 15TH.

Antirabic Treatment.

Lieutenant-Colonel Sir FREDERICK HALL asked the President of the Local Government Board if there was any institution in this country which was able to provide similar remedial treatment to that afforded by the Pasteur Institute in Paris; if not, whether it was necessary in consequence to send a large proportion of the persons suspected of suffering from rabies to Paris to be dealt with; if the delay this caused, apart from the expenditure involved, increased the danger to the patients; and if the Government would take steps to provide similar facilities for the treatment of this disease in this country.—Major ASTOR replied: Antirabic treatment similar to that given at the Institut Pasteur in Paris has been given at Plymouth since October last, under arrangements made by the Local Government Board. Similar arrangements were made last month for treatment to be given in London, and these have been notified to all local authorities and their medical officers of health. It has not been necessary to send any case for treatment to Paris for the last six months.

Powers of Boards of Guardians.

Lord HENRY CAVENDISH-BENTINCK asked the President of the Local Government Board whether it was his intention, when abolishing boards of guardians and transferring their powers to other bodies, also to transfer their duties of supplying the necessitous sick poor with a doctor, medicine, medical comforts, and all other necessaries to which they were entitled under 43 Eliz., c. 2; and whether he would take care that there should be officers of the bodies to which the powers were transferred who should be personally responsible for administering such necessary assistance.—Major ASTOR replied: The points mentioned by the honourable Member will not be lost sight of in any proposals which may be made for legislation transferring the functions of boards of guardians to other authorities.

MONDAY, MAY 19TH.

Red Cross Nurses and War Gratuities.

Captain BOWYER asked the Secretary of State for War whether Red Cross nurses who had served with the forces in the field during the progress of hostilities were a definite part of the military organisation; what schemes were contemplated to provide nurses with pensions, gratuities, or allowances following upon their war services; and, if no such scheme was at present in operation, whether immediate steps would be taken to deal with Red Cross nurses who had rendered such services to our fighting forces in the field to adequately recognise the claim which they had established upon the gratitude of the country.—Captain GUEST (Joint Patronage Secretary to the Treasury) replied: Red Cross nurses who have served with the British forces in the field in units recognised by the War Office are entitled to the same pensions, gratuities, or allowances for disability from the Ministry of Pensions as if they belonged to the Army Nursing Services. No question of pensions for services arises, but war gratuities for services are paid to auxiliary nursing personnel employed in Army hospitals and drawing pay from Army funds.

Demobilisation of Field Ambulance Officers.

Colonel LAMBERT WARD asked the Secretary for War whether he was aware that an order had recently been issued to the effect that the cadres of Territorial field ambulances were to proceed home under the command of the quartermaster, the officer commanding being detached for further duty in France; and whether, in justice to those officers, who in many cases had been abroad since 1915, an alteration in this arrangement could be made.—Captain GUEST replied: Cadres of field ambulances are sent home under the command of quartermasters in order to release medical officers who are eligible for demobilisation. It must not, however, be assumed that the medical officers of all cadres are eligible for demobilisation, as eligibility depends on age, length of service, and other considerations. Many officers have been serving since the beginning of the war and their claims must be considered first.

Mr. RAMSDEN asked the Secretary for War whether he was aware that in connexion with demobilisation the field ambulances considered they were being overlooked, and for many weeks not a single man had been discharged from some of the units; whether he was aware that there were a very large number of 1914 and 1915 men waiting to be demobilised; and whether, under these circumstances, he would ensure that they received at least equal treatment with other branches of the Army.—Captain GUEST replied: The regulations governing demobilisation apply to all corps, but personnel of the administrative branches of the Service, which includes the Royal Army Medical Corps, are liable to temporary retention as part of the military machinery of demobilisation until their services can be spared or they can be replaced. Men so retained are being replaced as rapidly as possible by men who are not eligible for demobilisation. I may add that senior officers have been appointed to inspect registers of units with a view to ensuring that no officers or men who are eligible for demobilisation are being retained without good and sufficient cause. The last part of the question therefore does not arise.

Vaccine Lymph.

Mr. WATERSON asked the President of the Local Government Board what were the sources of the vaccine lymph at present used at the national vaccine establishment.—Dr. ADDISON replied: The source of the lymph at present used at the national vaccine establishment is a strain of lymph obtained some years ago which has been carried on by repeated transference in the Government laboratory.

Remedies for Venereal Disease.

Mr. WATERSON asked the President of the Local Government Board whether registered medical practitioners were debarred from treating venereal diseases by other remedies than those now recommended by the Government.—Dr. ADDISON replied: The answer is in the negative.

Scottish Parochial Medical Officers.

Sir L. HARMSWORTH asked the Secretary for Scotland when he proposed to place Scottish parochial medical officers on the same basis as English and Irish parochial medical officers in the matter of superannuation.—Mr. MUNRO replied: Any action such as proposed in the question would require legislation. I have undertaken to consider the expediency of an inquiry into the general question of the superannuation of local officials in Scotland, and I have been in communication with local authorities' associations on the subject.

TUESDAY, MAY 20TH.

Territorial Medical Officers and Demobilisation.

Major MOLSON asked the Secretary for War whether he was aware of the discontent in the Territorial medical service at the want of consideration shown to them, many of whom had patriotically served years before the war and immediately on the outbreak of war had volunteered for foreign service though beyond the ordinary military age for service abroad, and were still retained abroad, to the detriment of their professional prospects, while many junior temporary medical officers had already returned home; and could he take steps to rectify these irregularities.—Captain GUEST replied: Since the armistice medical officers of the Territorial Force and Special Reserve, as well as those holding temporary commissions in the Royal Army Medical Corps, have been demobilised with due regard to the length of service, age, personal hardships and other considerations. It is not always possible, however, to release an individual officer, even though he may have such claim for consideration, as either his special medical qualifications, or the duties he is performing, may necessitate his retention.

Medical Boards and Disability Assessments.

Mr. HURD asked the Pensions Minister whether steps would be taken to expedite the work of the medical boards in regard to changes in disability assessment, so as not to keep disabled soldiers in suspense and in some cases throw them upon parish relief.—Sir JAMES CRAIG (Parliamentary

Secretary to the Pensions Ministry) replied: The honourable Member is presumably referring to cases where the man applies to be re-boarded on the ground that his disability has become worse or has been under assessed. In such cases if his claim is supported by the Medical Referee he is brought before a Medical Board as expeditiously as possible, and in the meantime, to avoid hardship, he can be given advances by his local committee in accordance with the finding of the Medical Referee.—Replying to supplementary questions, Sir JAMES CRAIG said he regretted delay in boarding men, but great pressure had been put upon the medical boards by the process of demobilisation.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BAILEY, R. T., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Superintendent of the Mill-road Infirmary, Liverpool.

SAXENDELL, ARTHUR, M.R.C.S., L.S.A. Lond., Medical Inspector for the Newton Abbot District; HARPER, W., M.R.C.S., L.R.C.P. Lond., Medical Inspector for the Holsworthy District; and STURDEE, EDWIN LAURENCE, M.R.C.S., L.R.C.P. Lond., Medical Inspector for the Barnstaple District, by the Devon Education Committee.

BRIDE, T. MILNES, Honorary Ophthalmic Surgeon to the Manchester Children's Hospital.

CROSBY, T. V., Major, R.A.M.C. (T.), Honorary Physician to the Leicester Royal Infirmary.

FORSTER, ANNIE MARY CECILIA, M.B., B.S. Lond., Maternity and Child-Welfare Medical Officer for the county of Somerset.

GUTHRIE, D., M.D., F.R.C.S. Edin., Surgeon to the Ear and Throat Infirmary, Cambridge-street, Edinburgh.

JEFFERSON, G., M.S., M.B. Lond., Honorary Assistant Surgeon; WHITE, H. V., M.D., Ch.B. Manch., Honorary Ophthalmic Surgeon; SMALLEY, A. A., M.B., Ch.B. Vict., Honorary Surgeon for Diseases of the Ear, Nose, and Throat; and JENKINS, C. E., M.R.C.S., L.R.C.P. Lond., Honorary Pathologist, to the Salford Royal Hospital.

RIVETT, LOUIS C., M.C., F.R.C.S., Assistant Surgeon to the Chelsea Hospital for Women.

STIBBE, E. PHILIP, M.R.C.S., L.R.C.P., Professor of Anatomy in the South African School of Mines and Technology.

TORRENS, JAMES, M.B., B.S., Physician to the Chelsea Hospital for Women.

Certifying Surgeons under the Factory and Workshop Acts:—McENIRY, D. B., L.R.C.S. & P. Edin. (Ballymacarberry); PORTER, A. (Harwich).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University.—Lecturer in Pathology. £700.
Battersea Borough Council Maternity and Child Welfare Centres.—Med. Consultant.
Bedford County Hospital.—H.P. £150.
Belfast, Queen's University.—Lectureship in Pharmacology. £450.
Birkenhead Education Committee.—Female Asst. Sch. M.O. £350.
Birmingham and Midland Hospital for Skin and Urinary Diseases.—Bacteriologist. £100.
Birmingham General Hospital.—H.S. £125. Also Cas. H.S. £100.
Bradford, Child-Welfare Work.—Female Asst. M.O. £400.
Bradford Children's Hospital.—H.S. £200.
Bristol Royal Hospital for Sick Children and Women.—H.P. and H.S. £150.
Bristol University.—Professor of Physiology. £800.
Cambridgeshire County Council.—Female Asst. M.O.H. £500.
Cape Town University.—Profs. of Med., Surg., Obstet., and Gynæc. £1250 each.
Cardiff, University College of South Wales and Monmouthshire.—Lecturer in Physiological Chemistry and Asst. Lecturer and Demonstrator in Physiology.
Central London Ophthalmic Hospital, Judd-street, W.C.—X Ray Officer. Also Rhinologist.
Charing Cross Hospital Institute of Pathology.—Chem. Path. £200.
Chelsea Hospital for Women.—Anæsthetist. £42.
Cornwall Education Committee.—Three Asst. Sch. M.O. £400.
Cotford, Taunton, Somerset and Bath Asylum.—Asst. M.O. £300.
Dumfries County Council.—Asst. County M.O. £500.
Edinburgh Royal Infirmary.—Asst. P. Also Three Asst. Surg.
Elizabeth Garrett Anderson Hospital, Euston road, N.W.—H.P., Obstet. Asst., Two H.S. £50. Also Clin. Assts.
Glamorgan County Council.—Two M.O.'s. £400.
Gravesend Hospital.—H.S. £200
Hongkong University.—Professor of Pathology. £600.
Hôpital Française, Shaftesbury-avenue, W.C.—Surgeons, Physicians, Ophthalmic Surgeon, and Honorary Radiographer.
Hull Royal Infirmary.—Cas. H.S. £150.
Ipswich, County of East Suffolk.—Asst. to M.O.H. £450.
Isle of Man, Asylums Board Lunatic Asylum.—Med. Supt. £600.
King's College for Women, Campden Hill-road, W.—Asst. Lecturer in Hygiene. £350.
Lambeth Metropolitan Borough.—Tuber. Officer. £600.
Leicester Royal Infirmary.—Two Hon. Asst. P.; and Hon. Asst. S.
Lincoln Mental Hospital, The Lawn, Lincoln.—Asst. M.O. £250.
Lincolnshire, Lindsey County Council.—Asst. County M.O.H.'s. £450. Also Dentists. £350.
Liverpool, Bootle Hospital, Derby-road.—Hon. Dental Surg.
Liverpool Royal Infirmary.—Three Hon. Asst. Physicians and Ophth. Surgeon.
Liverpool, St. Paul's Eye Hospital.—Hon. Ophthal. S. and Two Asst. Hon. Ophthal. S.'s.
London County Council.—Organisers Phys. Education. £600.
London Lock Hospital, 91, Dean-street, Soho, W.—H.S. £150.
London (Royal Free Hospital) School of Medicine for Women, Hunter-street, Brunswick-square, W.C.—Female Demonstrator in Physiol. £170.
London Temperance Hospital, Hampstead-road, N.W.—Med. and Surg. Registrars. 40 gs. Also Cas. Officer. £120.
Manchester Eye Hospital, Grosvenor-square, All Saints—H.S. £40.
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—Hon. Asst. Surg.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Marlborough College, Wilts.—Res. M.O.
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Res. Surg. £200.
Merthyr Tydfil County Borough.—Asst. Sch. M.O. and Asst. M.O.H. £500.
Metropolitan Ear, Nose, and Throat Hospital.—Clin. Assts.
Metropolitan Hospital, Kingsland-road, E.—Two Temp. Asst. P.
Middlesbrough County Borough.—Female M.O. for Maternity and Child Welfare Work. £400.
Middlesbrough, North Ormesby Hospital.—Asst. H.S. £175. Also H.S. £250.
Middleton-in-Wharfedale Sanatorium, near Ilkley.—Med. Supt. £450.
Middlesex Hospital, W.—Physician.
Norwich, Norfolk and Norwich Hospital.—Part-time Asst. £200.
Nottingham General Hospital.—H.S. and Cas. H.S. £250.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.P. £100.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O.
Reading, Royal Berkshire Hospital.—Sen. Res. M.O. £350.
Rotherham County Borough.—Asst. Tuberc. O. £400.
Royal London Ophthalmic Hospital.—Refract. Asst. £100.
Royal National Orthopædic Hospital.—Res. H.S. £200.
Royal Westminster Ophthalmic Hospital.—H.S. £75.
St. Pancras Dispensary, 39, Oakley-square, N.W.—Hon. P. Also R.M.O. £210.
St. Pancras, South Infirmary, Pancras-road, N.W.—Asst. Med. Supt. and Asst. M.O. £300.
Salop County Council.—Medical Inspection and Treatment of School Children, Maternity and Child Welfare. Six Appointments. £450.
Sheffield Royal Infirmary.—H.S. £150. Also H.S. for Ear, Nose, and Throat. £150.
Southampton, Free Eye Hospital.—H.S. £150. Also Hon. Consulting Physician and Hon. Consulting Surgeon.
Stannington (Northumberland) Children's Sanatorium.—Female Res. M.O. £250.
Stoke-on-Trent County Borough Education Committee.—Male and Female Asst. Sch. M.O.s. £400. Also Sch. Dentist. £300.
Sudan Medical Department.—Med. Inspector. £600.
Swansea Borough Council.—Asst. M.O.'s. £450.
University College Hospital Tuberculosis Dispensary, Gower-st., W.C.—Tuberc. O. £200.
Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of the Chest.—Two Asst. Res. M.O. £200.
Victoria Hospital for Children, Tite-street, Chelsea.—Three Surgeons, Ophthal. S., and Dent. S.
Wakefield General Hospital.—H.S.
Wakefield, West Riding County Council.—Sch. Oculist. £150.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Asst. Surg.
Wigan Infirmary.—Two Asst. Hon. P.
Willesden Urban District Council.—Two Surgeons. 125 gs.
Wolverhampton and Staffordshire General Hospital.—Two H.S.'s. £200.
Woolwich Metropolitan Borough.—M.O.H. £800.
Worthing Hospital.—Hon. Oph. Surg.
York Dispensary.—R.M.O. £250.
Yorkshire, North Riding.—County M.O. £850.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Carney.

Births, Marriages, and Deaths.

MARRIAGES.

HAIG FERGUSON—JENKINS.—On May 14th, at Eggbuckland Parish Church, Crownhill, Plymouth, Wm. Haig Ferguson, M.C., B.A., M.B., Captain, R.A.M.C., to Gwendoline Mary, second daughter of the late W. S. Jenkins, J.P., of Scleddy, South Wales, and Mrs. Jenkins, The Cottage, Fishguard.

MACNAUGHT—HILL.—On May 16th, at Regent-square Presbyterian Church, London, William Wyllie MacNaught, M.C., Captain, R.A.M.C., to Jeannie Symington Hill, daughter of Dr. J. Wright Hill and Mrs. Hill, of Ardlui, North Woolwich.

DEATHS.

BRADBURNE.—On May 13th, at Torquay, after a long illness, Arthur Alison Bradburne, F.R.C.S.E., aged 47, late of Manchester and Southport.

DENNING.—On May 14th, at Blackfriars-road, S.E., John Vere Charles Denning, M.R.C.S., L.R.C.P. I.

EDWARDS.—At Taiyuanfu, China, of typhus, George Kemp Edwards, M.B., Ch.B., aged 30 years.

HOLYOAKE.—On May 18th, in hospital, Ralph Holyoake, Lieutenant-Colonel, R.A.M.C., retired.

WIGLESWORTH.—On May 16th, suddenly, the result of an accident at Hurlstone Point, Porlock, J. Wiglesworth, M.D., F.R.C.P.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, May 23th.

SOCIAL EVENING: at 8.30 P.M.
Conversation in Library, light refreshments and smoking.
At 9 P.M., Dr. George Steele-Perkins: How to Start and How to Succeed in General Practice.
All Medical Officers, including Allies, are cordially invited.

MEETINGS OF SECTIONS.

Monday, May 26th.

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, G. Paton Pollitt, J. Howard Mummery): at 7.30 P.M.
Annual Meeting.—Election of Officers and Council for 1919–1920.
Casual Communication by Mr. F. N. Doubleday.
Paper:
Dr. A. H. Drew, D.Sc., and Mr. J. G. Turner, F.R.C.S.: The Demonstration of the Presence of Germs in the Gum, Periodontal Membrane, Bone and Teeth in "Pyorrhœa," and other Dental Diseases.

Tuesday, May 27th.

MEDICINE (Hon. Secretaries—Charles R. Box, W. Cecil Bosanquet): at 5.30 P.M.
Annual Meeting.—Election of Officers and Council for 1919–1920.

Wednesday, May 28th.

BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—Chas. W. Buckley, J. Campbell McClure): at 5.30 P.M.
Annual Meeting.—Election of Officers and Council for 1919–1920.
Paper:
Dr. Ferreyrolles: Immunity and Mineral Water Treatment.

The Royal Society of Medicine keeps open house for medical officers of all the Allied Forces, and invites them to make free use of its library and rooms. The Emergency Post Graduate Scheme, under the charge of the "Fellowship of Medicine" is also open to all medical officers. Particulars of this will be supplied by the Secretary, Fellowship of Medicine, 1, Wimpole-street, London, W. 1.

TUBERCULOSIS SOCIETY, at the Royal Society of Medicine 1, Wimpole-street, W.
MONDAY, May 26th.—8.30 P.M., Discussion on Tuberculosis in Relation to a Ministry of Health (opened by Dr. R. C. Wingfield).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

LONDON HOSPITAL MEDICAL COLLEGE.
A Special Course of Instruction in the Surgical Dyspepsias will be given at the Hospital by Mr. A. J. Walton. Lectures, given in the Clinical Theatre:—
MONDAY, May 26th.—1 P.M., Lecture XXII.:—Ætiology and Pathology of Acute and Chronic Pancreatitis.
FRIDAY.—10 A.M., Lecture XXIII.:—Symptoms and Treatment of Acute and Chronic Pancreatitis.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.
WEDNESDAY, May 28th.—4.30 P.M., Dr. Perkins: Demonstration of Cases in the Wards.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
TUESDAY, May 27th.—3 P.M., The Tyndall Lectures:—Prof. W. H. Bragg, C.B.E.: Listening under Water. (Lecture I.)
FRIDAY.—5.30 P.M., Sir John Rose Bradford, K.C.M.G., C.B.: A "Filter-Passing" Virus in Certain Diseases.

CHADWICK PUBLIC LECTURES, at the Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, Cavendish-square, W.
Three Lectures on the Problem of Hygiene in Egypt.
THURSDAY, May 29th.—3 P.M., Lecture II.:—Lieut.-Col. A. Balfour, R.A.M.C., C.B., C.M.G.: The Solution of the Problem, Past and Present.

BOOKS, ETC., RECEIVED.

CHURCHILL, J. AND A., London.
Beverages and their Adulteration. By H. W. Wiley, M.D. Pp. 422. 21*s*.

FROWDE, H., AND HODDER AND STOUGHTON, London.
Early Diagnosis of Tubercle. By C. Riviere, M.D. 2nd ed. Pp. 314. 10*s*. 6*d*.
Medical and Surgical Aspects of Aviation. By H. G. Anderson, M.B. Pp. 255. 12*s*. 6*d*.
Fevers in the Tropics. By Sir Leonard Rogers, Lt.-Col. I.M.S. 3rd ed. Pp. 404. 30*s*.
War Neuroses and Shell Shock. By F. W. Mott, Brev. Lt.-Col., R.A.M.C.T., with Preface by the Right Hon. C. Addison, M.P. Pp. 348. 16*s*.

GILL, M. H., AND SON, Dublin.
Irish Ethno-Botany and the Evolution of Medicine in Ireland. By M. F. Moloney, M.B. Pp. 96. 4*s*. 6*d*.

HARRISON AND SONS, London.
Transactions of the Medical Society of London. Edited by H. Lett, F.R.C.S., and B. Cautley, M.D. Pp. 302.

HEINEMANN, WILLIAM, London.
The Moon and Sixpence. By W. S. Maugham. Pp. 263. 7*s*.

KEGAN PAUL, London.
Organic Chemistry. By V. von Richter. Vol. I. Translated by P. E. Spielmann, F.I.C. 2nd ed. Pp. 720. 21*s*.

SIMPKIN, MARSHALL, London.
Causes and Consequences. By G. Gordon Samson. Pp. 126. 2*s*. 6*d*.

Notes, Short Comments, and Answers to Correspondents.

LARREY AND WAR SURGERY.

By WALTER G. SPENCER, M.B., M.S., F.R.C.S.,
SURGEON TO THE WESTMINSTER HOSPITAL.

PART II.

Indications for Immediate Amputation.

IN considering the conditions which indicated immediate amputation it must be kept constantly in mind that in those days there were no antiseptics, no anæsthetics, no nursing. The wounds necessitating amputations were mostly due to musket- and cannon-balls. Musketry fire produced a smashing effect up to about 30 or 40 metres, and ceased to be effectual at 250 metres. Cannon ceased to cause much more than contusions at 1000 metres. The limb immediately above a smashing injury was rendered numb and flaccid; in many instances the man hardly felt the injury at all for some time. Then the muscles above the injury, from being relaxed and numb, became rigid, tender, and the seat of pain. The general condition of the patient was influenced by loss of blood; those picked up alive had generally bled only to faintness. Larrey frequently mentioned that the wounded, as he proceeded to amputate, were pale and the pulse hardly to be felt. Yet his cases recovered sufficiently to walk off or to ride away on horseback. This reaction is to be explained by the fact that the vaso-motor nervous system was intact, and the removal of the limb, by diminishing the area over which the circulation was distributed, also contributed to the recovery of the blood pressure. An immediate amputation prevented a shock from "recurrent hæmorrhage," and also that of the early septic intoxication now known as "wound shock." The blood-vessels were cut across transversely, and being uninjured and not inflamed, had their full property of contracting and retracting. In spite of moving about Larrey's cases escaped secondary hæmorrhage.

Larrey's ordinary dressing consisted in covering the stump with a square of linen, perforated by holes for the escape of discharges and firmly fixed around the limb above. This was not changed, but each day the patient himself wiped the outer surface with water. He thus escaped infection during healing. The patients, by getting about in the open air, caused the discharge to evaporate to a great extent. The evaporation checked the growth of organisms and kept down odour. Amputated immediately the man could fend for himself, he could forage for food; if it were an arm which he had lost he could walk off back towards France; or if it were the leg he could be put on a horse and ride stage by stage on his way home. The other factor in the success of Larrey was that the wounded came under him directly after the injury because he was always close behind the fighting. The wounded after Dettingen arrived at the hospital and the English surgeon began amputating 10 days after the battle. Larrey's essential merit was his zeal for the wounded, which placed him close up to the fighting, in the shelter of a trench under the walls of Acre, behind a sand dune at Aboukir, in a barn just at the back of the line of guards holding Eylau, under the shelter of a corner of the wood of Essling. During a lull of the fighting he went out in front and was so seen by Wellington at Waterloo, his last battle. In order to keep up on the march he and his medical officers and orderlies were mounted, and carried their instruments and dressings with them on packhorses.[1] If not quickly picked up the wounded were exposed to the barbarities of the camp followers who invaded the field at the end of the battle. They stripped, and in doing so often mutilated, both dead and wounded, high as well as low. Marbot was stripped at Eylau to the last boot, in trying to pull off which the robber put his foot on his abdomen and so stirred up Marbot to consciousness.[2]

Results of Immediate Operation.

Before retelling some of Larrey's wonderful successes one may collect the results of immediate amputation scattered through his books and, adding them together, say that he was successful in more than three-quarters of all his amputations. Of those that died some did so as the result of concurrent injuries, some from changes and chances during convalescence, especially during the retreats of the French armies. At Wagram the Imperial Guard had 1200 wounded; of these 600 returned to duty and 250 were returned to France, including 30 amputations. Of the 1200 picked up only 45 died.

The first marked success by Larrey was on March 30th, 1793, on the height of Alzez in the Palatinate, where on a

[1] "Campagnes," i., plate ii.
[2] Marbot: Mém. I., ch. xxxiv., p. 351.

cold day he did an immediate amputation on 7 cases and all recovered. One of them, a captain aged 38, had his leg shot off below the knee by a cannon-ball, which at the same time split the lower part of the femur longitudinally for 5 inches and stripped off the periosteum. Larrey immediately amputated at that level and the patient was forthwith transported 45 miles back to Landau, yet he recovered and was seen by Larrey ten years later.[3] Another famous case in the Army of the Rhine was that of a Captain Buffy, of the Artillery. His right arm was struck by a cannon-ball on the elbow. Without falling off his horse he continued to command for 10 minutes until the firing of his guns had silenced the enemy. Then Larrey amputated through his arm, and he forthwith mounted his horse and returned to his battery. He had healed by the twenty-fifth day, whilst continuing on active service in the field.

Cases in Egypt.

When the first battle of Aboukir was fought Larrey was 40 yards behind the fighting, and none of the wounded were on the ground for more than a quarter of an hour without being attended to; of about 500 wounded, 40 were amputated immediately. At the second battle of Aboukir or the battle of Canopus on March 21st, 1801, against the English under Sir Ralph Abercromby, General Lanusse had the knee traversed by a small bullet which ruptured the popliteal vessels and nerves and fractured the femur. Larrey proposed immediate amputation, which was declined. Eight hours later Lanusse was in violent pain, with spasms and hiccough, a pale anxious face, cold extremities, and a wretched pulse. Amputation was then done, the actual cutting taking 13 seconds, but he died that night. On the other hand, General Silly, aged 60, after his leg had been nearly shot off below the knee, was amputated immediately without feeling any pain owing to the numbness of the limb. Just then the English cavalry charged down, so Larrey picked up his instruments, placed Silly on his shoulders, and ran into a field planted with caper bushes on ridges between ditches, where the cavalry could not follow, and so he got back to the rear. Silly recovered quite well, but Larrey noted that he never received any recognition from him for the service rendered.

A chieftain among the Mamelukes had his arm smashed by a cannon-ball at the battle of Heliopolis. When Larrey approached with his knife he bowed his head in the belief that it was his head which was to be cut off. He explained afterwards that he had never heard of amputations. Larrey amputated at the shoulder-joint, and he had healed when handed over 25 days later.[4]

The battle of Eylau was fought on Feb. 8th, 1807, in a high north wind, which brought frequent snowstorms. Larrey was the only one there who had a thermometer, and he noted that the temperature fell during the morning of the battle to − 14° R.—i.e., zero F. He worked all day and the following night with his feet in the snow, and thus saved a great number—the fate of the majority of the wounded was horrible. The dead and dying alike were stripped by the survivors to get clothing and boots. The wolves came out from the neighbouring forests, as depicted in the painting exhibited in the Salon of 1901 called "L'heure des Fauves." Those in and around Eylau who survived the cold succumbed largely to epidemics of hospital gangrene and tetanus.

(To be concluded.)

SOCIAL MEDICINE IN VIENNA.

THE April issues of the *Wiener klinische Wochenschrift*, which have just reached us, are chiefly occupied with original papers on clinical matters and give curiously little indication of the conditions of want prevailing in the city. A new starvation disease is, however, described from the First Medical Clinic in the form of a painful osteopathy associated with rarefaction of the tibiæ, comparable to that sometimes occurring in old age and referred to a deficiency of nitrogen in the intake. But the Vienna correspondent of the *Deutsche medizinische Wochenschrift* gives in the issue of that journal for April 24th a very telling picture of the general conditions prevailing in Vienna as presented to the medical man. There are, he tells us, at present in Vienna 4000 doctors, compared with the 2800 of peace times; "most of them have nothing to do and are perishing." They are "proletarisiert" and in need; they cannot take up any other calling if they would, although in consequence of the "socialisation and communisation" of the world the future for them is impenetrable. The State Public Health Department, too, is suffering eclipse. Parliament has decided that it shall not continue as an independent Government office, and from the middle of March unavailing search has been made for anyone to undertake the duties of Under-Secretary of State to a Department the work of which is being thus circumscribed. The last half of the correspondent's letter deals with the hungry condition of the city. Deaths from starvation are numerous, especially among older people. The whole population of institutions in certain cases has died of hunger. A mortality of 32,000 in Vienna before the war increased in 1918 to 51,000, while the 6223 pre-war fatal cases of tuberculosis were practically doubled in 1918. In German Austria the deaths over 5 years of age (that is to say, uninfluenced by the lowered birth-rate) increased as follows between 1912 and 1917: 1912, 100,781; 1914, 105,334; 1915, 116,334; 1917, 133,219. This enormous rise must, it is stated, be chiefly ascribed to starvation, since during the war the efforts of the medical profession were rewarded in keeping the civil population practically free from epidemic disease. The average number of calories now available per head of population in Austria he gives as 1500 to 1600, exception being made for the redoubtable "Red Guard," who "although not particularly strenuously employed" each receive 4500 calories a day. In the hospitals it is only with the utmost difficulty and with the help of all manner of accessory foods that the level of 1600 calories is reached. Of the 80,000 pre-war Vienna dogs only some 30,000 are said still to exist, the greater number of the remainder having been abducted and devoured by the thieves. A comparative table is given of the food prices now prevailing compared with those of last October and earlier. Such items as 32 to 50 kr. for a kilo of horseflesh, 90 to 120 kr. a kilo for butter, 26 to 28 kr. per kilo for flour, sufficiently illustrate the effect which shortness of supply has had upon the price of necessities.

THE ROYAL ST. ANNE'S SCHOOLS, REDHILL.

A STRONG appeal is being made in behalf of the Royal St. Anne's Schools, Redhill, which are said to be on the eve of closing if immediate assistance is not forthcoming. The schools have done in the past noble work, which has been carried on continuously for more than 200 years, and are now in great financial difficulties as a result of the war. During the past four and a half years serious increases in the cost of maintenance have had to be faced, whilst on the other hand, the subscriptions and donations have naturally fallen off. The Old Boys of the School have played a gallant part in the war, very many having joined the colours.

Subscriptions may be sent to Barclay's Bank, Redhill, or to the Hon. Treasurer (Special Appeal Fund), Mr. Arthur Trower, "Wiggie," Redhill.

IN LIEU OF A LIMB.

IT is doubtful whether the loss of a limb has ever proved to be too much for the natural adaptability of man to his environment. From quite ancient days—even so long ago as 210 B.C.—artificial arms are known to have been used. Several examples from the fifteenth, sixteenth, and seventeenth centuries are still in existence. M. Ernest Wickersheimer has written an interesting note on some fragments of an iron artificial arm found in the tomb of Jean de Mittelhausen, an Alsatian gentleman who died in 1564. The two fragments consist of the hand and a part above and below the elbow; from these a model of the artificial limb has been reconstituted by M. le Dr. Forrer, director of the Museum of Antiquities of the Chateau de Rohan at Strasburg. The artificial limb was made for an amputation of the arm near the left elbow-joint; an elbow-joint capable of passive movement is provided, movement at the wrist is possible, the thumb and fingers can be flexed at both the phalangeal and metacarpo-phalangeal joints. By pressing on one button the thumb is extended, on another the fingers are extended. The arm was evidently fastened to the body by a leather strap.

By the exercise of his natural faculties, however, a man may "carry on" very well without any elaborately designed apparatus. In a recent number of the *Badminton Magazine* Mr. G. M. Townshend, of the Indian Woods and Forest Service, relates his personal experience of learning to play games and to take part in sport in spite of having lost his right leg by amputation about 9 inches below the hip-joint. He tried for three years to wear an artificial limb, but had to give up the attempt and rely on crutches. In spite of this, within a year of his amputation he was able to swim and ride a horse; next year he took up shooting, and now is able to play golf, drive a motor-car, and cycle. He mounts his horse from the off side to avoid injuring the stump. The saddle has a handle on the right-hand side which is sometimes used in trotting and cantering; he uses safety stirrups. He is able to cycle 30 miles a day, and with a three-speed gear can climb most ordinary hills. His chief difficulty has been in learning to mount and dismount. When mounting he locks the front wheel by putting the brake on, gets astride the machine, supports himself by means of the right crutch resting on the ground, and then pushes off by pressing on the left pedal and the crutch. An illustration is given of the special pedal used; two straps which come over the instep enable him to pull the pedal up again after the down-stroke.

[3] "Campagnes," i., 70.
[4] Rel. de l Armée d'Orient and "Campagnes," ii., 1.

THE EPIDEMIOLOGY OF THE "SPANISH DISEASE": TRANSMISSION OF INFECTION THROUGH FLEAS.

WE have received from Dr. Chr. Engelbreth, of Copenhagen, an account of a series of experiments which he has carried out with a view to determining whether "Spanish disease" may not be transmitted as a blood infection through the intermediary *pulex irritans*. He was led to study this possibility through a consideration of the incidence curve for this disease in Copenhagen. This took the form of a U, which form Dr. Engelbreth maintains can only be explained by the supposition that some living factor is concerned in the propagation of infection. He points out also that lice have been shown to carry infections during the war, and argues that fleas may operate in the same way in a disease which has many symptoms in common with the pyrexias of trench warfare. The fleas were captured in a lodging house and at varying dates infected by allowing them to bite patients suffering from the disease. The patients chosen were in every case suffering from typical "Spanish disease," often complicated with pneumonia, and had all of them come from homes in which several cases occurred. It was found that the fleas lived longest when kept at the temperature of the human body—the breast pocket of the author's waistcoat proving the most satisfactory thermostat. Even under these conditions the infected fleas were only kept alive with difficulty for more than two days, while uninfected fleas were able to live under harder conditions and without food for ten days. The experiment consisted in allowing the infected insect to bite a healthy individual. Fourteen such experiments were carried out, and of these the result was negative in half the cases. These negative results, Dr. Engelbreth thinks, may be due to the immunity of the persons experimented on or to the gradual loss of infectivity of the pulices. In the last three experiments this second explanation appears to be the more probable, and from them it seems to follow that the pulex which had proved infectious up to the tenth day after its exposure to infection was subsequently to that date no longer noxious. In the seven cases which are considered as positive the following symptoms were observed after an incubation period varying from 30 hours up to 10 days: headache usually lasting for some days; angina with injection of the throat; attacks of coughing with expectoration; pain in the back and joints; weariness, exhaustion, anorexia, insomnia, and sweating; and a pyrexia varying from 99·5° to 101° F.; bradycardia was observed in two cases. In only one case was there a serious pulmonary complication, and in that case only after an interval of two months. No case of the acute fulminating kind occurred.

It is difficult to draw important conclusions from so small a series of experiments, as the author fully recognises. The possibility of infection from sources outside the experiment could not be guarded against, and an incubation period of from nine to ten days is longer than is found to be usual in this country. Dr. Engelbreth is chiefly anxious that his colleagues may be sufficiently interested in his results to undertake collateral investigation.

VENTILATION IN THE TROPICS.

WE have received from Mr. J. Wallace, C.E., of Bombay, an account of an interesting experiment in tropical ventilation. This was carried out in a flat-roofed house. A square chimney of light sheet iron 10 feet high and 22 inches square was set up on a suitable opening in the roof. The air within had a temperature of 97° F. and on passing out of the chimney it was raised to 113°. The flow of air was at the rate of 26,850 cubic feet per hour during the hottest part of the day. It is thus possible in hot climates to commandeer the sun's energy for the purpose of efficient ventilation.

A METHOD OF OBTAINING A GOOD SURFACE ON MICROSCOPE SLIDES.

A FREQUENT source of trouble in microscope work is the presence of a surface on the slide which will not permit the spreading of films in an even manner. The fluid breaks into irregular pools upon the surface of the glass, owing most probably to a trace of greasy matter present. In a note on the subject which we have received from Dr. W. E. M. Armstrong, bacteriologist at the Central London Ophthalmic Hospital, he states that of the many agents he has tried heat is the only one which acts simply and expeditiously. The heat obtainable in the ordinary dry steriliser—say, at 180° C.—is, he says, not enough, a temperature of several hundred degrees being required. He therefore puts the slides, after washing in soap and water and drying, in a tin box and places this over a Bunsen burner for about half an hour. A small oven has been constructed for the purpose, provided with trays or drawers. Slides prepared in this manner, Dr. Armstrong says, are more reliable than new ones in regard to the perfection of surface. The films spread in a satisfactory manner and the pattern of distribution is not interfered with.

CHILDREN'S CONVALESCENT HOME, WESTON-SUPER-MARE.

THE annual meeting of the subscribers to this charity was recently held. The report stated that during the past 25 years 7393 patients had been admitted to the hospital; of these, 5187 had fully recovered and 1702 had been improved. This work had been accomplished by an expenditure of £16,819.

THE TOOTHLESS MOTHER.

THE National League for Health, Maternity, and Child Welfare (4, Tavistock-square, W.C.) is about to try an interesting experiment, made possible by the generosity of Miss Gibson, who, out of a donation of £2000 to the League, has asked that £500 be spent on facilitating the provision of dentures for mothers attending infant welfare centres in London and Greater London. A whole-time dental mechanic is therefore to be engaged and a workshop fitted up for him, where dentures ordered by the dentists engaged at dental clinics attached to mothers' centres will be made, only the cost of the materials being charged. Since the charge for labour is the most expensive part of dentures, it is hoped in this way to reduce the present high cost of teeth for necessitous mothers, thousands of whom are perhaps injuring their babies through their mouths being septic. The Children's Jewel Fund is contributing £250 towards the scheme, which should also encourage the establishment of more dental clinics for mothers, now greatly needed.

SMALL HOLDINGS AND THE RETURNED SOLDIER.

WE have received from the Board of Agriculture and Fisheries five little booklets issued for the information of Service men intending to settle on the land and sold to the general public at the price of 2*d.* each: No. 1, "Pig Keeping"; 5, "Farm Crops"; 6, "Soils and Manures"; 7, "Fruit Growing"; and 9, "Potato Growing." Most of those for whom the information has been provided will find the treatment of the various subjects suited to their requirements, and the series should form a useful addition to the many excellent pamphlets which the Board has issued for allotment holders and others during the war.

Communications, Letters, &c., to the Editor have been received from—

A.—Asylum Workers Association, Lond., Hon. Sec. of; Major A. Abrahams, R.A.M.C.: Army Medical Service, Director-General of, Lond.; Messrs. Arnold and Sons, Lond.

B.—Dr. L. S. Burrell, Lond.; Dr. G. Blacker, Lond.; Surg.-Comm. W. Bastian, R.N.; Messrs. A. E. Braid and Co., Lond.; British Museum (Natural History), Lond., Director of; Board of Agriculture and Fisheries, Lond.; Mr. W. G. Ball, Lond.

C.—Major J. H. Carroll, M.C., U.S.A.; Dr. L. Colebrook, Lond.; Conjoint Board of Scientific Societies, Lond.; Dr. F. G. Crookshank, Lond.; Mr. H. Cohen, Liverpool; Dr. E. L. Collis.

D.—Mr. H. Dickinson, Lond.; Sir H. B. Donkin, Lond.

E.—Mr. W. H. Evans, Lond.; Col. T. R. Elliott, A.M.S.

F.—Lt.-Col. M. Flack, C.B.E., R.A.F.; Factories, Chief Inspector of, Lond.

G.—Mr. J. J. Grace, Lond.; Mrs. Lloyd George, Lond.; Mrs. Grieve, Chalfont St. Peter; Mrs. K. M. Goring, Manchester: Dr. A. G. Gibson, Oxford; Great Northern Central Hospital, Lond., Sec. of; Dr. S. R. Gloyne, Lond.

H.—Mr. J. F. Hosken, Lond.; Hôpital et Dispensaire Français, Lond., Asst. Sec. of.

I.—Invalid Children's Aid Association, Lond.; Illuminating Engineering Society, Lond.; Insurance Committee for the County of London.

J.—Dr. F. Wood Jones, Lond.

K.—Prof. R. Kennedy, Glasgow.

L.—London Dermatological Society; Local Government Board, Lond., Sec. of; Mr. T. B. Layton, Lond.; Dr. G. Little, Lond.; Local Government Board, Lond., Public Information Branch.

M.—Ministry of Labour, Publicity Dept., Lond.; Dr. R. Morton, Lond.; Medical Research Committee, Lond.; Mr. J. H. Montague, Lond.; Dr. R. G. McGowan, Manchester; Major D. M. Marr, R.A.M.C.; Col. C. S. Myers, A.M.S., Lond.; Medical Sickness, Annuity, and Life Assurance Friendly Society, Lond.

N.—National Health Insurance Commission (England), Solicitors Department, Lond.

O.—Mr. H. C. Orrin, Lond.; Sir W. Osler, Bt., Oxford; Overseas Military Forces of Canada, D.G.M.S. of.

P.—Dr. T. H. Pope, Margate; Panel Committee for the County of London; Capt. H. Platt, R.A.M.C.(T.)

R.—Royal Faculty of Physicians and Surgeons of Glasgow, Sec. of; Dr. W. H. R. Rivers, Cambridge; Royal Institute of Public Health, Lond.; Dr. W. C. Rivers, Worsboro' Dale; Mr. S. C. Ranner, Lond.; Dr. J. D. Rolleston, Lond.; Royal Medical Benevolent Fund, Lond., Sec. of; Royal Institution, Lond.; Royal Society, Lond.; Dr. J. W. Rob, Weybridge.

S.—Dr. R. K. Sen, North Lakhimpur; Dr. R. A. Stoney, Dublin; Samaritan Free Hospital for Women, Lond., Sec. of; Dr. E. B. Sherlock, Lond.; Prof. W. Stirling, Manchester; Dr. W. C. Sullivan, Lond.; Mr. A. Stewart, Birkenhead; Prof. E. H. Starling, Lond.

T.—Dr. J. Todesco, Lond.; Dr. J. Tatham, Oxted.

U.—Université de Liége, Faculté de Médecine; University of California, San Francisco, Dental Dept., Dean of.

W.—Mr. L. Whale, Lond.; Dr. C. H. Whiteford, Plymouth; Mrs. J. Ward, Lond.; Dr. R. M. Wright, Trowbridge; Mr. J. A. Wilson, Warrington.

Y.—Dr. R. A. Young, Lond.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.